MARCH 1961

Material Handling Engineering

...in 1945 as FLOW Magazine

STEVENS RICE
UNIVERSITY MICROFILMS
313 NORTH FIRST ST
ANN ARBOR MICH
FIZ

EXPOSING THE PHONY CONSULTANT

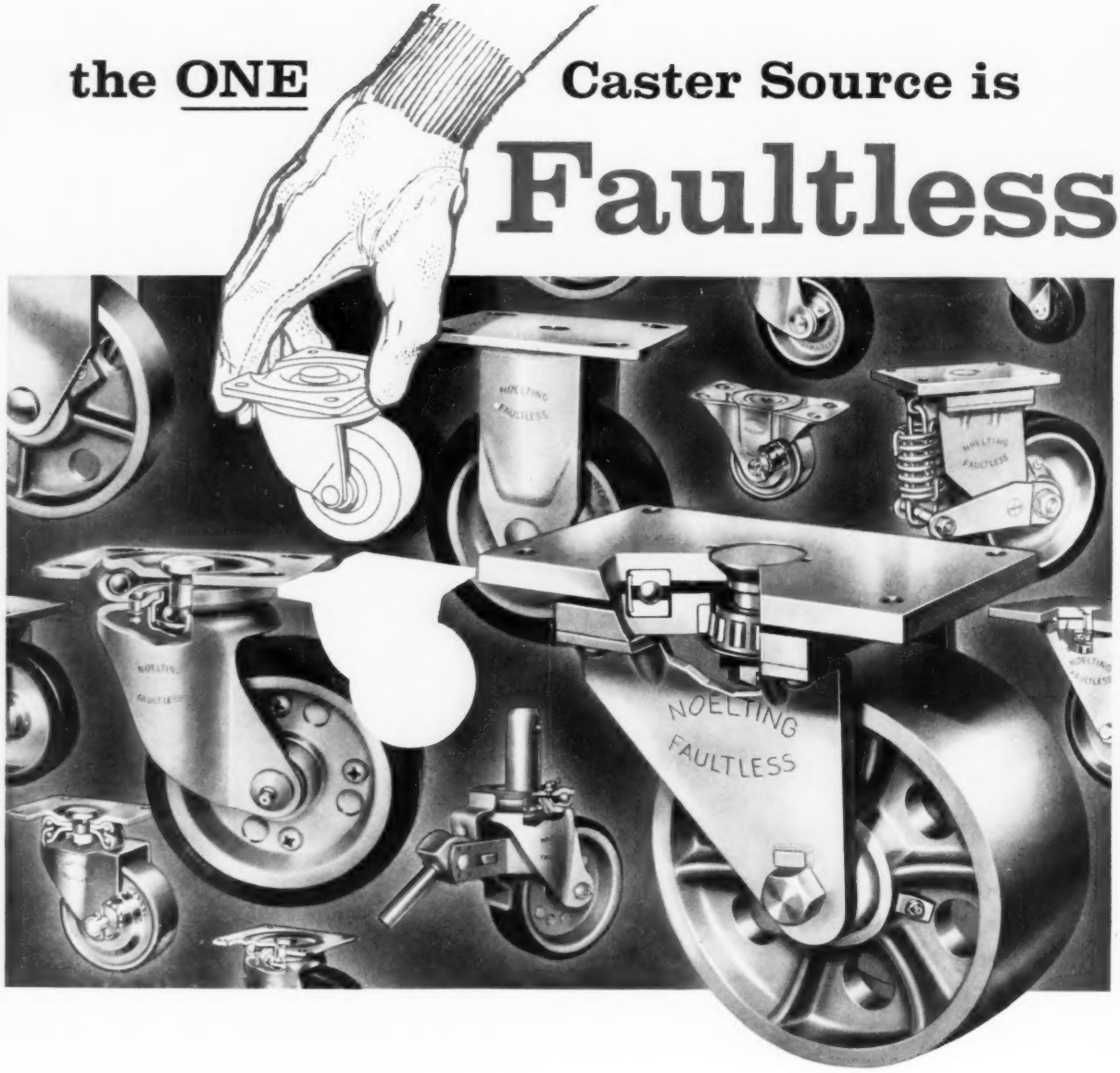
ALSO IN THIS ISSUE:

AUTOMATIC UNITIZING AND PALLETIZING

AN INDUSTRIAL PUBLISHING CORPORATION MAGAZINE

10 Steps to Safe Lifting 58
How Material Control Aids Your Company Operation .. 65
Electronic Cop Speeds Navy Warehouse Traffic 70

the ONE Caster Source is Faultless



Faultless manufactures over 10,000 caster types, sizes, and varieties . . . casters for every conceivable purpose . . . *The Casters* to move your products easily, in quantity, economically! Faultless Casters are engineered and tested to roll smoothly and efficiently under any load from 15 lbs. to 15,000 lbs. per caster. And Faultless manufactures a complete selection of swivel, rigid, plate, and stem casters, plus a wide variety of special application casters. This complete selection from one manufacturer—Faultless Caster Corporation—includes *The Casters* to reduce materials handling costs and increase efficiency at your plant.

Your Faultless Industrial Distributor, or your local Faultless Sales Engineer can supply you with detailed information on the complete Faultless Caster line. Also, your Faultless Distributor maintains a substantial stock of Casters for immediate shipment.

NOELTING Faultless Casters

Faultless Caster Corporation EVANSVILLE 7, INDIANA

Branch Offices in principal cities of the U.S.; see the Yellow Pages of the telephone book under "Casters." Canada: Stratford, Ontario

Circle 44 on Reader Service Card

New NEOTHANE Tire can tote 2 to 4 times the load 4 times longer

Stack the NEOTHANE up against any conventional tires – under the worst conditions this remarkable Goodyear industrial "solid" will outlast the others as much as 4 times, even when lugging 2 to 4 times the load.

Secret of this unmatched toughness is a new Goodyear polyurethane development that has amazing durability combined with resiliency. Photo above taken through heavy plate glass shows that NEOTHANE tires roll over metal chips, splinters, even broken glass with virtually no gouging or cutting. They won't swell or turn spongy when driven through water, oil, grease, solvents or acids.

Tough as they are, however, NEOTHANE tires "give" enough to stand up under rough going. And they're harmless to polished floors. If your service is really tough and if your tire dollars aren't buying enough mileage, why not try NEOTHANE? Full details are on tap at your Goodyear Dealer's. Or write Goodyear, Industrial Tire Sales, Akron 16, Ohio. Remember—lots of good things come from Goodyear.

Buy and Specify NEOTHANE Industrial Tires by

GOODYEAR

Neothane—T.M. The Goodyear Tire & Rubber Company, Akron, Ohio

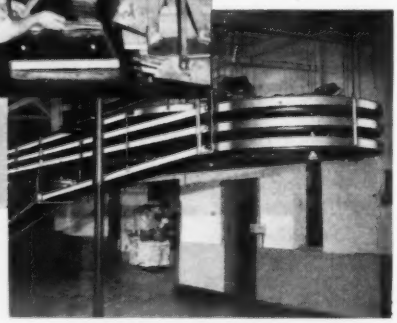
MORE TONS ARE HAULED ON GOODYEAR TRUCK TIRES THAN ON ANY OTHER KIND

Circle **51** on Reader Service Card

USP WENDWAY

CONVEYS ANYTHING . . . Anywhere!

Above: In large mid-western glass plant, this "production line" Wendway system conveys finished filters from assembly and stapling machines to elevated shipping station.

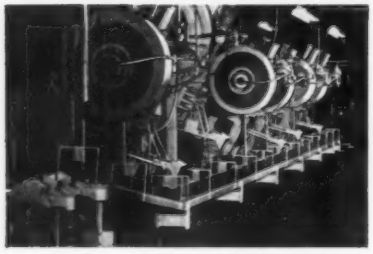


Right: Ceiling mounted Wendway saves valuable floor space and proves excellent for cooling or drying operations.

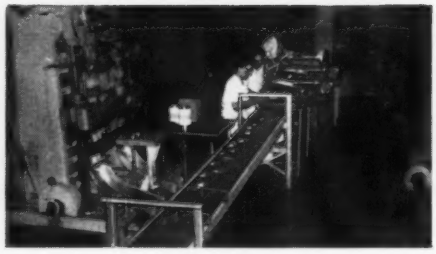
Wendway offers modern remote-controlled efficiency for conveying practically any light product to *any* point in your plant. It turns corners, goes up or down, in single or multiple tiers—synchronizes to machine or production line pace. Fits easily into any plant system . . . can be floor or ceiling mounted to save work space, eliminate handling and equipment. And, Wendway's sturdy, resilient belting is ideal for handling *any* product or package up to approximately 20 lbs. per lineal foot.

Wendway is readily available in a variety of standard belt widths (regular or stainless steel) of 6" and 9" in ½" pitch with #9 wire; 12", 15", 18" and 24" in ⅝" pitch with #7 wire; 15", 18", 24" and 30" in ¾" pitch with #5 wire. Special widths on request.

Check your plant operation now and see how many places a Wendway system could save your space, handling costs, time and dollars.



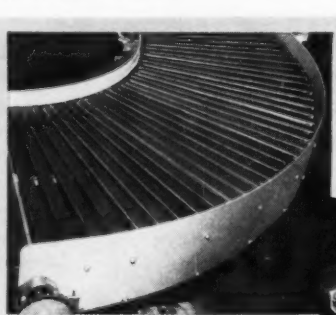
Wendway easily adapts and installs with existing equipment to speed processing and continuous flow of any industrial products—eliminates handling, storage and equipment.



"Stub" Wendway, a short, single tier unit conveys packages from bag loader through a series of stapling and sealing operations. "Stub" units may be permanent or portable, caster-mounted to suit the need.

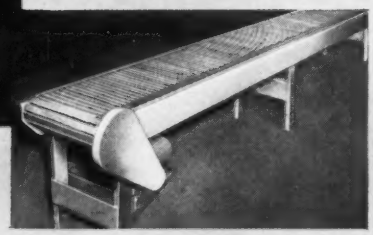
A typical package conveyor installation, this three-tier Wendway system extends the full length of the truck loading dock. System is fed by self-powered "roll-away" switch section (center, left).

Write Today . . .
for complete information on USP Wendway Conveyor Systems.



A highly dependable, extremely versatile, adaptable system with greatly increased carrying capacity (70 lbs. per lineal foot).

● WENDWAY SLAT-TYPE CONVEYORS . . . FOR THOSE HEAVIER, MORE DIFFICULT APPLICATIONS



Available in 24", 30" and 36" standard widths in powered curves or straight sections. Larger widths on special order.

UNION STEEL PRODUCTS CO.
Industrial Conveyor Division
ALBION, MICHIGAN

Circle 115 on Reader Service Card

reader's guide to

MARCH 1961

Material Handling Engineering

Established in 1945 as FLOW Magazine

volume 16 number 3

EXPOSING THE PHONY CONSULTANT 55
He's more incompetent than dishonest; either way, he'll hurt your business.

10 STEPS TO SAFE LIFTING 58
Wire rope safeguards to protect your people and product.

EFFICIENT SCRAP HANDLING SPELLS PROFIT 63
Dump boxes fill Anaconda's specs for a collection system.

HOW MATERIAL HANDLING AIDS YOUR COMPANY'S OPERATION 65
Second Project Upgrade article discusses the economics of material control.

ELECTRONIC COP SPEEDS NAVY WAREHOUSE TRAFFIC 71
On-the-spot coverage of a fantastic military handling installation.

CUT COSTS WITH INDOOR/OUTDOOR HANDLING 74
The same truck does both jobs to speed brick shipments.

SAME ICBM PACKAGE IS REUSABLE/EXPENDABLE 76
A delicate missile fuel chamber gets precision handling.

AUTOMATIC UNITIZING AND PALLETIZING 78
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How to justify automatic palletizing for single and multiple product lines.

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4 NEW MODELS

NUTTING MATERIAL HANDLING EQUIPMENT

Over 1000 standard models

Here are 4 new standard models designed to boost production with less effort, fewer accidents. This new equipment is a good example of Nutting's policy to standardize on "specials" whenever possible. You get quick delivery — you get important savings compared with the high cost of made-to-order models.

Bigger pay loads with less effort

Especially built for strength without weight, this truck is made of aluminum alloy — structural type to handle heavy loads. Lightweight design means manpower is able to handle more frequent, larger loads.

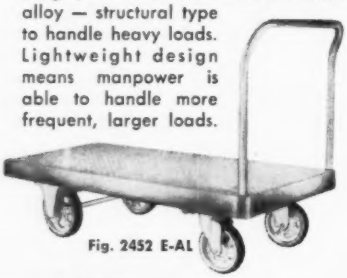


Fig. 2452 E-AL

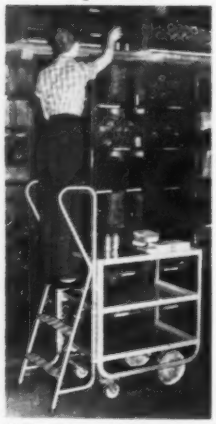
Dollar Saving Jack and Skid System

Nutting Hook-'N-Go jacks and skids for mobile storage are low in initial cost . . . eliminate expensive flooring and re-handling . . . provide instant mobility of stored materials. One jack services many skids.

Fig. 2418 Jack

Fig. 422 Skid

Fig. 912-334



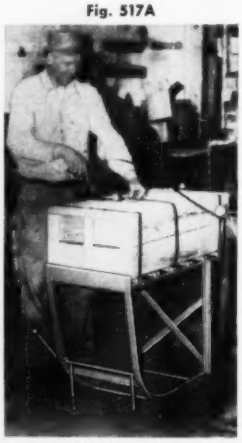
Safe High-Reach Order Picking

Operator's weight depresses spring loaded ladder for braking. Safety tread steps. Forward and side support with cross bar and extended handles.

Easy Packing and Strapping

Grid top makes it easier to strap cases and cartons. Foot operated stabilizer prevents rolling. Rocker type frame discharges load easily. Available less wheels. Height: 21½" or 26½".

Fig. 517A



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☐ FIG. 2452 E-AL ☐ FIG. 422 FIG. 2418

☐ FIG. 912-334 ☐ FIG. 517A ☐ CASTERS

☐ Send copy of Catalog 59G. ☐ Have representative contact me.

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Company Name_____

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City_____ State_____

MEMBER CASTER AND FLOOR TRUCK

Circle **88** on Reader Service Card

Material Handling Engineering

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CRANE DESIGNERS
CRANE BUILDERS
CRANE Counselors

Since 1910

In designing and building cranes since 1910 this company has adhered to a policy of thoroughly studying each problem presented from the standpoint of conditions faced and service to be rendered in order to recommend the proper type of crane and equipment.

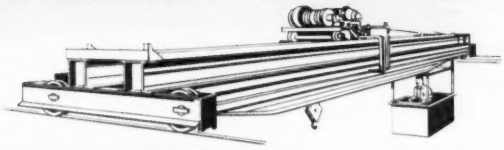
Growth in future demands is also considered and it is significant that some of the first Euclid Cranes manufactured are still in service. Impressive, too, is an uncommon record of repeat orders.

Euclid has the experience to study needs and render sound counsel to crane user; also engineering personnel and factory facilities to translate the facts obtained into equipment of the highest order.

You are invited to avail yourself of this counsel and can do so without entailing any obligation.

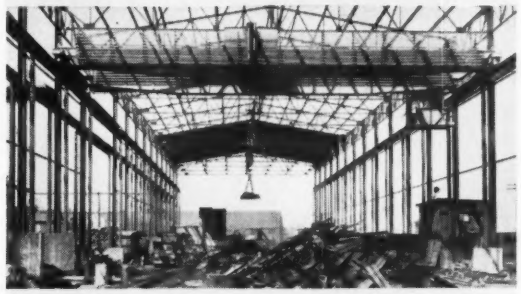
The EUCLID CRANE & HOIST Co.
EUCLID, OHIO

Euclid Cranes

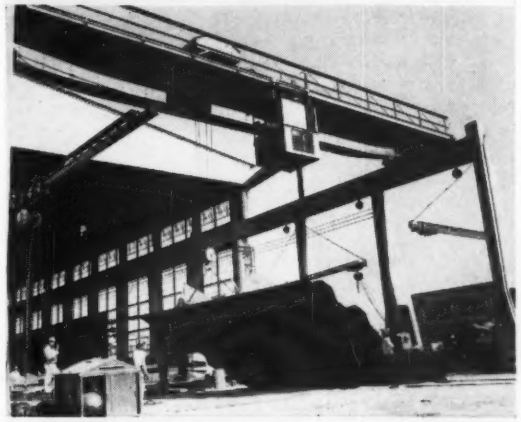


ELECTRIC HOISTS, Also

Euclid Overhead Crane and Semi-Gantry Crane serving the assembly floor of a large machinery manufacturer.



Outdoor Crane equipped with two hoists; also facilities for operating both magnet and scrap iron grapple.



Indoor - outdoor, center controlled crane operating in a large shipbuilding plant.

Underslung, floor controlled crane designed to afford maximum use of a material warehouse.

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HYSTER 4

SpaceSaver 20

SpaceSaver 25

From HYSTER...World's Largest

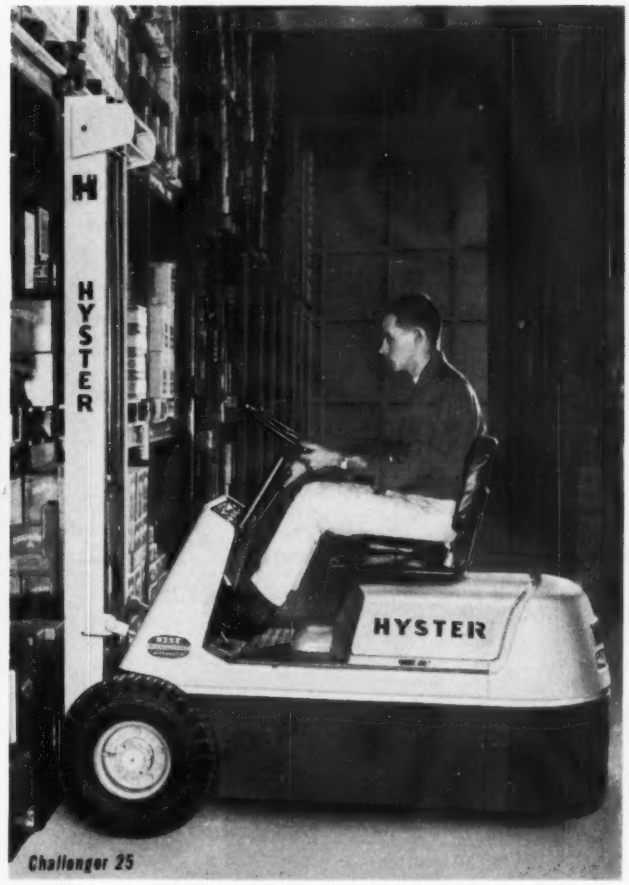
SpaceSaver 20	CUSHION TIRES	2,000 LBS. CAPACITY
SpaceSaver 25	CUSHION TIRES	2,500 LBS. CAPACITY
Challenger 20	PNEUMATIC TIRES	2,000 LBS. CAPACITY
Challenger 25	PNEUMATIC TIRES	2,500 LBS. CAPACITY

- Monotrol control — Hystamatic transmission foot controlled.
- Fastest lift speed (105 fpm with 2,000-lb. load).
- Highest lift — lowest overhead clearance.
- Instant access to all components that require servicing.
- Functional "human engineered" design by Henry Dreyfuss.

TOTALLY NEW LIFT TRUCKS

2,000 AND 2,500 LB. CAPACITIES • CUSHION AND PNEUMATIC TIRES

allenger 20



Challenger 25

Builder of 2,000-lb. Pneumatics

The line that sets the *ENGINEERING PACE* for all Lift Trucks –

HYSTER has it!

You can do 10 hours' work in 8 hours with these new Hyster trucks. They are so new – so far ahead of competition that no other trucks in the 2,000 and 2,500 lb. class can come close in *driver efficiency, safety* and *ease of control, power, lift speed, service accessibility* and *compactness.* Four great trucks – cushion and pneumatic tires – with a long list of exclusive features for safer, faster, cheaper handling than you have ever known before. Call your Hyster dealer or write for literature.

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INDUSTRIAL TRUCK DIVISION
P. O. Box 847 • Danville, Illinois

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mhe NEWS ROUNDUP

Change NTC course dates

THE MHEDA COURSE on Distribution Warehousing has been rescheduled for April 3 through 7 at the National Training Center. It was scheduled for January. But industry asked for more time to arrange for attendance of interested executives. You may find out more by writing to Director Harry Freeman, National Material Handling Center, 61 Narragansett Ave., Newport, R.I.

In other news, Training Center President Clifford C. Haddrell asks the industry to buy $40,000 worth of debentures. This will be used partly to finance a director of admissions to sell the courses, oversee advertising and publicity. He will assist Freeman who will then limit himself to preparing courses, securing lecturers, and operating the Center.

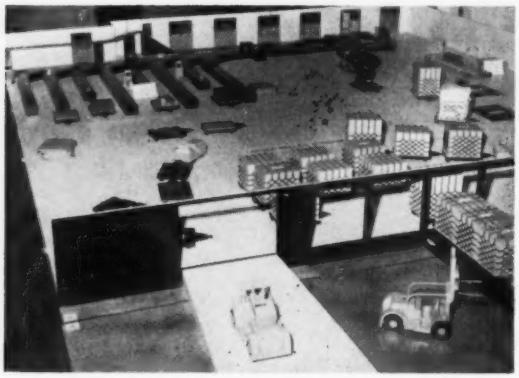
First look at automatic plant

Metzger

STURDI-BILT DIVISION, Union Asbestos & Rubber Co., recently showed sales engineers its fully automated storage rack plant in Springfield, Tenn. Vice President B. G. Metzger told them automated manufacturing is the key to filling orders quickly and economically. To serve a growing market, Sturdi-Bilt is expanding manufacturing, engineering, and sales, he said.

Handling report from SAE Exposition

THE AIR FORCE hopes to have its material handling support system (463L) in operation by June 1963. This was reported by MHE Associate Editor Dick Dietz from the recent International Congress and Exposition of Automotive Engineering in Detroit. The Air Force has approved the basic systems approach; the loading system with its basic pallet, restraint net and rail; cargo ground handling and terminals; freight preparation, and a simple card and label for in transit control. (See "An Integrated Air Cargo System" in the December 1959 issue of MATERIAL HANDLING ENGINEERING). But how fast 463L can be placed in effect depends



on the Air Force budget. The photo shows a display model of cargo handling proposed for Travis Air Force Base.

Dietz also reported these things to watch, as presented at the Society of Automotive Engineers (SAE) technical sessions:

... *The fuel cell.* The sessions on batteries invariably turned to fuel cells, showing the direction of thinking in this field. On the other hand, one research man predicted great improvement in the next 10 years for the lead-acid battery.

... *The skycrane.* Basically a helicopter, this machine does the job of an overhead hoist without being restricted to rails and plant ceilings.

... *The Wankel engine.* This is a rotary combustion engine, simple in design, developing high torque. You may see it first in industry, although the developers refuse to speculate on application at this point.

... *Freight containerization.* The need for standards remains paramount. Progress is maddeningly slow, but it's coming. One discussant suggested they may be trying to standardize too many things.

Reinforced tape gets Federal spec

ASPHALTIC AND NON-ASPHALTIC reinforced tapes are described in newly-issued Federal Specification PPP-T-45a. Atlantic Gummed Paper Corp. reports that the tape corresponds

Continued on page 10

NOW!

HEIL offers the LOAD LUGGER® ..... and the HUGE HAUL®

LOAD LUGGER detachable containers are available in a variety of sizes — open and closed tops — up to 16-cu-yd capacities. Make your material handling more profitable with the cost-cutting LOAD LUGGER system.

These two well-known, widely used, detachable container systems are now made by Heil — a natural and logical expansion of our present product line. Material handling has been Heil's specialty for 60 years.

Heil's know-how, combined with that of the key personnel retained from the former maker of the LOAD LUGGER and HUGE HAUL assures you that these units will always be "tops" in the industry.

SAME DEALERS. No change in dealer setup. Get your LOAD LUGGER and HUGE HAUL systems and containers from the dealer with whom you've been doing business. New Users — contact us for the name of the dealer in your area. A country-wide sales and service organization backs Heils extensive manufacturing facilities.

HUGE HAUL detachable containers give you big payloads —capacities up to 40 cu yd. Like the LOAD LUGGER, the HUGE HAUL container is picked up and set down automatically by the HUGE HAUL. Both units also dump loads like dump trucks.

LOAD LUGGER and HUGE HAUL are registered trade names.

THE HEIL CO.
MILWAUKEE 1, WISCONSIN

Factories: Milwaukee, Wis. • Hillside, N. J.; Lancaster, Pa.; Cleveland, Ohio; Modesto, Calif.

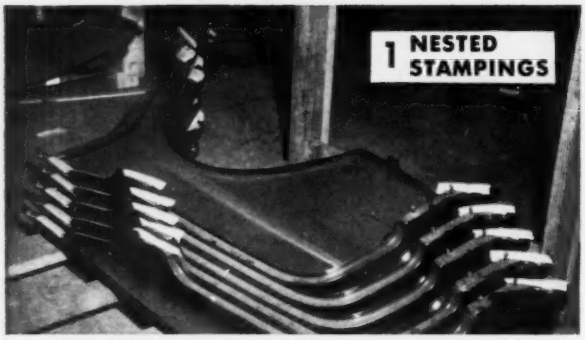
LOAD LUGGER and HUGE HAUL SYSTEMS

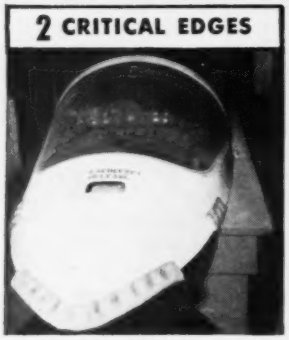
Sales Offices: Hillside, N. J.; Washington, D. C.; Atlanta, Ga.; Cleveland, Ohio; Chicago, Ill.; Milwaukee, Wis.; Kansas City, Mo.; Denver, Colo.; Dallas, Texas; Los Angeles, Calif.; Seattle, Wash.

Circle 61 on Reader Service Card

New Use-Reports Show

HOW EDG-PAK PREVENTS DAMAGE, SAVES MONEY!





1 **Nested Automobile Stampings.** Sharp flanges don't sheer or punch through Edg-Pak's "Strength of Steel" wire inner construction. Adjoining surfaces are fully protected. Edg-Pak doesn't fall off . . . Spring-Grip holds tight—speeds up handling—reduces manpower needs!

2 **Critical Aircraft Edges.** Edg-Pak slips over edges fast. Spring-Grip holds securely. Cushioned 3-way "Strength of Steel" construction improves top, bottom and side protection of critical edge. Reduces damage, speeds handling—Edg-Pak's "Strength of Steel" saves labor and materials!

3 **Steel Strapping.** Prevents sharp edges from cutting through to damage corners or printed surfaces. "Velvet Glove" cushioning prevents marring or scratching. Spring-Grip speeds up both "spot" and length protection applications.

WRITE TODAY!

For New EDG-PAK Card with Sample Materials, Specifications, Price List

FLEX-O-LATORS, INC.,
Carthage, Missouri Dept. MHE-3

YES! **I want new EDG-PAK Samples, Specifications and Price List!**

NAME_____ TITLE _____

FIRM_____

ADDRESS_____

CITY_____ STATE_____

Circle 46 on Reader Service Card

NEWS ROUNDUP

to that described in Rule 41, Section 7, for two-strip closure of corrugated fiberboard boxes. You can get copies of the specification from the General Services Administration, Business Service Center, Washington 25, D. C.

Trailer holds low temperatures

THE RAIL-TRAILER CO., Chicago, has developed a trailer with a new refrigeration system and insulation. Designed to carry frozen foods, it will hold -10° to -20° for at least five days, according to President E. F. Ryan. He said the new method of insulation can be used to modernize refrigerator trailers. Rail-Trailer demonstrated the new application recently in Chicago.

Warehousers visit publishers

Under the auspices of the International Cooperation Administration, a Philippines warehousing and storage productivity team recently visited the offices of The Industrial Publishing Corp., publishers of MATERIAL HANDLING ENGINEERING. In an information exchange session with MHE editors, the team members mentioned that mechanzied material handling was in its infancy in the Philippines because the country is agricultural and labor is cheap. Too much damage of material received by ship is a common problem for which the team was seeking answers in better protective packaging.

MHE's Managing Editor Bernie Knill describes The Industrial Publishing Corporation's data processing equipment to (left to right): Lauro Magsaysay, Philippines Transport and General Workers Organization; Teotimo Roja, Ildefonso Tionloc Warehousing Co.; Thomas F. Gomez, Yellow Ball Freight Lines, Inc.; Mariano Santos, Manila Port Service; and Ramon Verches, Delgado Bros. Inc.

Cost reduction is warehousemen's theme

THE 70TH ANNUAL MEETING of the American Warehousemen's Association will feature "The Merchandise Warehousing Cost Reduc-

Continued on page 12

New slanted "full-vision" cowl that makes load pick-up unusually fast and easy, is an outstanding feature of Towmotor Stream-Liner Series fork lift trucks (above). Load capacities, 3000 to 5000 lbs. Diagram below shows how operator is able to see within 12" of the heel of forks.

TOWMOTOR'S ON THE MOVE

—in more plants, in more ways, with more money-making features. On the move, handling more materials, gaining lost storage, speeding distribution. On the move, raising productivity, lowering costs, increasing profits. Get going with Towmotor fork lift trucks and carriers—made only by TOWMOTOR CORPORATION, CLEVELAND 12, OHIO.

TOWMOTOR
THE ONE-MAN-GANG®

Circle **109** on Reader Service Card

70-ft. cranes install easily in light metal buildings—no extra runways

American Monorail's Long Span Cranes have capacities up to 10 tons and spans up to 70 feet. They ride on just two runways and are built to the construction requirements of your building.

Circle 4 on Reader Service Card

NEWS ROUNDUP

tion Conference." The meeting will be April 9-12 in Denver. The program will cover industrial relations, warehouse labor, office automation, operations budgeting, insurance, warehouse sanitation, and traffic developments. Featured will be a material handling rodeo with narrow aisle fork lift trucks under warehouse conditions.

MHEDA committee meets

THE ENGINEERED EQUIPMENT COMMITTEE met in Cleveland to recommend seminar material for 1961 MHEDA Convention. With Joe Green, Hooper-Green Co., as chairman, the committee discussed various phases of "Engineering Costs" as the most likely subject.

Containerization needs systems approach

PACKAGING, HANDLING, AND TRAFFIC should look at containerization from a systems viewpoint. That's what J. P. O'Hanlon told 150 transportation and packaging specialists who attended a one-day conference held in New York City by the newly-organized Bulk Packaging and Containerization Institute. O'Hanlon is packaging manager of Radio Corp. of America, Camden, N.J. He called for a simple, clear-cut approach by government regulatory agencies to insure a containerization program guaranteeing pickup at the shipper's dock and safe delivery to the customer. O'Hanlon cited a need for a new set of government rules based on package performance rather than on freight classifications.

To bring you firsthand information on the conference, MHE had on the scene Eastern Editor Henry Lefer. He reported these pleas for standardization:

- The longer we wait, the tougher it will be to achieve standardization. But it's needed and soon. Full use of standardized containers would cut at least $4 billion a year from the nation's transportation bill—Carroll W. Boyce, editor of Fleet Owner Magazine.
- The various carriers have chosen the sizes of containers best suited to their individual needs. But lack of standardization is analagous to the railroads trying to operate on tracks of various gages—Edward J. McCabe, vice president, Sea-Land Service Inc.
- The American Standards Association (ASA) is considering recommendations for sizes of large van containers and pallet containers. There's hope for adoption in the not-too-distant future. ASA has asked for an international standards organization, meeting in

Geneva, to join the U.S. in developing standards—Herbert H. Hall, chairman of ASA's committee on container standardization.

Lefer also reported these highlights:

- Until now there has been no central point for combining information on unit packaging with palletizing and containerization. The Bulk Packaging and Containerization Institute will be a clearing house—Frank W. Green, packaging consultant.
- Trailers on flat cars offer railroads the best remedy for what's ailing them—declining business. For example, the Flexi-Van operation is the most profitable venture ever undertaken by the New York Central Railroad—R. L. Milbourne, director of Flexi-Van sales and service, NYC System.
- Air cargo will remain a tiny fraction of the nation's freight transportation business unless military orders for cargo aircraft make it possible to build them for commercial use at a price air carriers can afford—Gerard A. Craig, Lockheed Aircraft Corp.

Officers of the Institute were elected, pending adoption of bylaws. They are Green, president; Fred Muller, Jr., Arthur D. Little Co., Norman Bateson, Pullman Standard Co., and Packaging Consultant Charles J. Zusi, vice presidents, and O'Hanlon, secretary-treasurer.

Good luck, Mac

THE MHE STAFF offers congratulations to W. B. "Mac" McClelland on his appointment as headquarters secretary of AMHS. Mac, formerly editor of MHE, is one of the real students of material handling. We know he'll bring new enthusiasm and devotion to the field in this position with the American Material Handling Society.

New industrial waste system

NO NEED TO SCRAP your trash containers just because the city dump has moved out of convenient reach. Dempster Brothers Inc. worked out a system to retain the containers' usefulness. A compaction truck enables you to dump many container loads for a single trip to the dump, rather than a trip for each load. When a round trip to the dump took 5 minutes, it was efficient to carry separate container loads. In many cities today, a round trip takes 30 minutes or more because of new dump locations, no longer efficient for single loads. You can convert old containers for use with the truck. A kit provides new lids and easily-welded side channels. Associate Editor Dick Dietz watched the system work at a Dempster demonstration

Continued on page 14

With multiple runways eliminated, you get by with lighter roof supports. Yet you benefit from all the advantages of a true American Monorail crane.

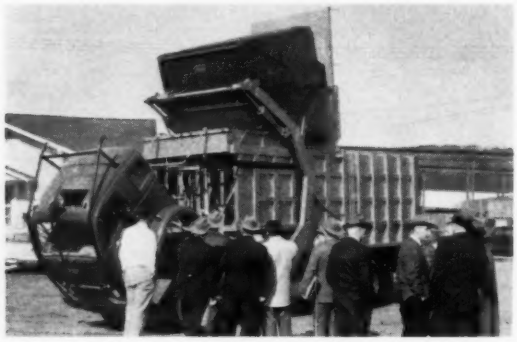
AMERICAN MONORAIL

ENGINEERED MATERIALS HANDLING

1129 EAST 200th ST., CLEVELAND 17, OHIO
Conveyor Division, Tipp City, Ohio
Subsidiary: Canadian Monorail Co., Ltd., Brampton, Ont.
Circle 4 on Reader Service Card

NEWS ROUNDUP

in Knoxville. The truck has a 30-cu.-yd. body, can compact up to 120 cu. yd. of scrap with a hydraulically-driven plate that develops thrust of 85,000 lb. At the dump, the plate pushes the load out the back end of the truck. You can get containers built to go with the new compacter. But, because you still can use old ones, Dempster figures a savings of $75 million to the



handling industry in containers that otherwise would be scrapped. Visitors (photo) watch a 3,265-lb., 12-cu.-yd. metal container dump into the truck hopper. Note the lifting arms that clear the cab doors at all times and the iron pipes lining the front of the cab (tilted forward to show the engine). Metal shields at the hopper keep trash from blowing about during loading.

Dock workers, employers cooperate

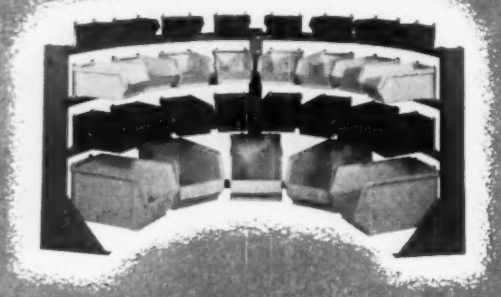
THE DOCKERS' BRANCH of the Scottish Transport and General Workers' Union and the Glascow, Scotland, Port Employers' Association have agreed to the introduction of new methods and material handling equipment. They also agreed to cooperate so the port can become more competitive through speedy and efficient cargo handling. They agreed that (1) goods be handled with the maximum economic use of mechanical gear, (2) the piecework rate be adjusted so that both employers and dock workers benefit, and (3) new methods be introduced as quickly as possible and a trial rate be fixed so the operation can continue while the rate is confirmed or adjusted.

Consultant story in a hurry

A LOS ANGELES consulting firm figures it should get its story across to top management in 2½ minutes, with an informal, breezy style, plus cartoons. Semco, Sweet & Mayers put out

Continued on page 16

Lewis | PLASTIBOX ASSEMBLY CONTAINER ACCESSORIES



SEMI-CIRCULAR BENCH STAND

This bench stand provides ultimate accessibility of pan contents to a single worker. The stands are available to mount all three size Plastiboxes, as shown, or can be furnished for one size, or in other combinations of sizes to suit your assembly work. Boxes can be quickly removed for refilling.

DOUBLE and SINGLE FLOOR STANDS

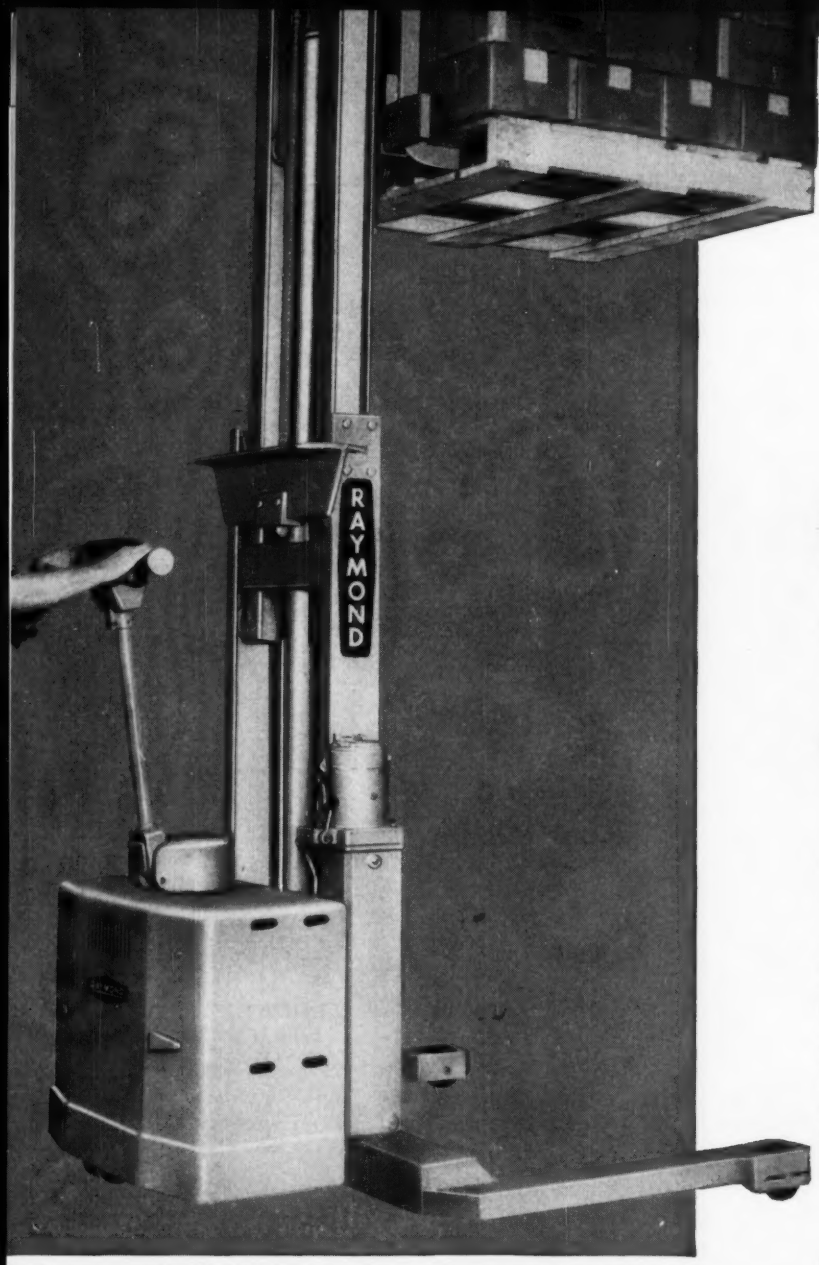
These new storage racks are available as either free-standing double or single wall-supported units, as shown. Either unit will hold up to 224 Plastiboxes and either will mount all one size or various combinations of Plastibox sizes. Boxes can be quickly removed for refilling.

PLASTIBOX—PATENT APPLIED FOR

G.B. Lewis COMPANY
603 Montgomery Street • Watertown, Wisconsin

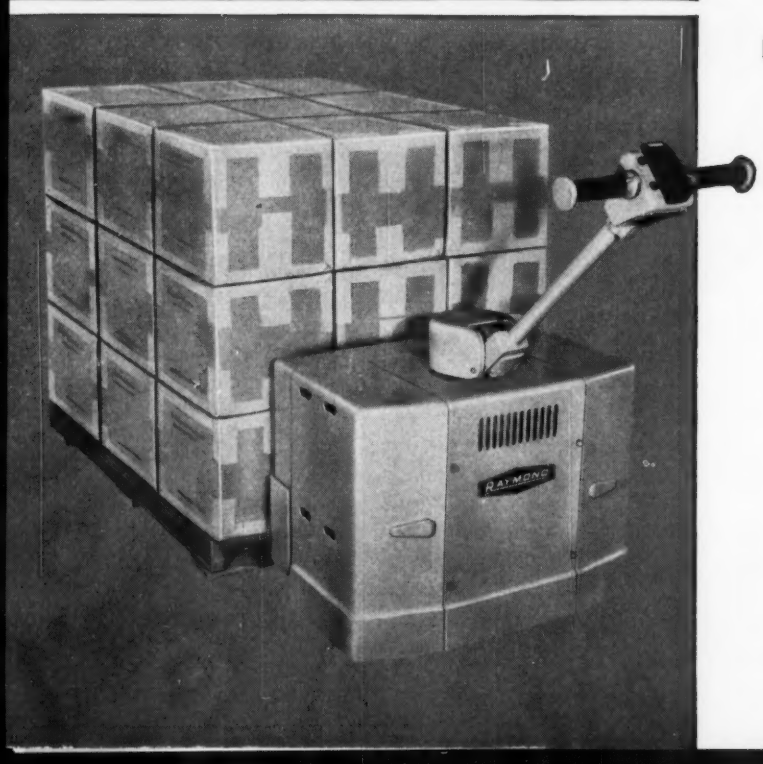
Complete details, brochure, prices and information on other accessories are available by writing . . . DO IT TODAY!

Circle **68** on Reader Service Card



low cost way to lift loads..

RAYMOND WALKIE STACKER tiers 2,000 lb. loads more than 10 feet high . . . yet *costs half as much* as rider type trucks! Operates in aisles as narrow as 5 feet. Ideal for small warehouses or for supplementary use in larger operations. Features automatic safety control, unique 24-volt battery system, three speeds forward or reverse.



..move loads

RAYMOND WALKIE LOW-LIFT . . . the smallest walkie of all. Just 21⅛" longer than load! Three speeds forward or reverse. 24-volt power. Choice of two 12-volt industrial or four 6-volt golf cart batteries. 4,000 lb. capacity.

RAYMOND®

Originator and World's Largest Builder of Narrow Aisle Trucks

Write for latest Bulletin!

The RAYMOND CORPORATION
3348 Madison St., Greene, N. Y.

Please send RAYMOND Walkie Bulletin.

NAME _____ TITLE _____
COMPANY _____
STREET _____
CITY _____ STATE _____

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Erickson

AR-TIC-U-LA-TED STEERING

TURNS SHORT... LASTS LONG!

This articulated pivot (illustrated above) reduces turning radius to a minimum and gives the advantages of four-wheel steering. It entirely eliminates weaknesses and rapid wear common to complicated conventional steering mechanisms. It is similar to the system used on large, well-known earth movers.

Above is a typical Erickson Low-Lift Platform Truck. Standard models up to 10,000 lbs. capacity. Custom models up to 20,000 lbs. capacity. Platforms custom built up to 6 ft. wide, up to 24 ft. long.

Erickson Hi-Lift Platform Trucks have various platform sizes and lifts available. Stand-up cockpit (as shown) or operator's seat. Standard automotive controls are a feature of all Erickson Platform Lift Trucks.

ERICKSON
the Workhorse of Lift Trucks

Erickson Kart-All materiel-personnel carriers are available with scissors-lift platforms. Airline model shown above has standard baggage bed, 4,000 lbs. capacity. Custom models built with beds up to 8 ft. wide by 24 ft. long, up to 12,000 lbs. capacity. Hydraulic outriggers obtainable for stabilizing Kart-All when loading or unloading heavy loads.

ERICKSON POWER LIFT TRUCKS, INC.
215 St. Anthony Blvd. N. E., Minneapolis 18, Minn.

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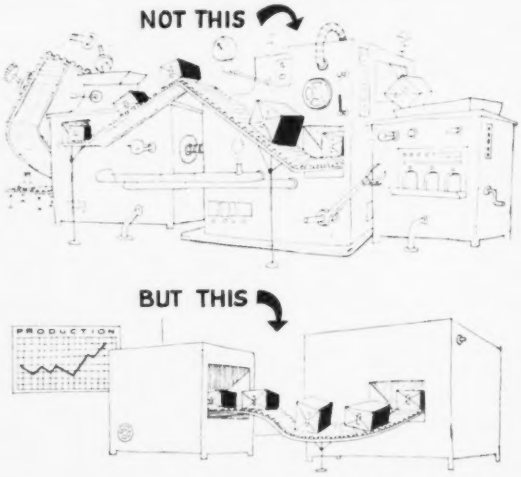
NEWS ROUNDUP

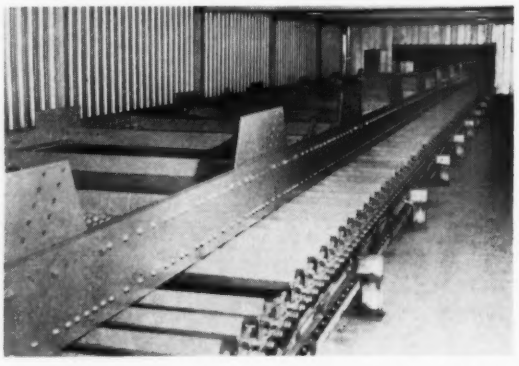
a 26-page brochure that can be read entirely in 4 to 5 minutes; the large type only, in 2½ minutes. The firm makes it available to those



interested in industrial layout (plant layout, material handling, warehousing, and order systems). SS&M is at 8255 Sunset blvd., Los Angeles 46.

Giant conveyor for painting

FIRST STEP in a multimillion dollar modernization program at R. C. Mahon Co.'s Structural Steel Division, Detroit, was a mammoth conveyorized paint system. The conveyor, 15 ft. wide and 400 ft. long, carries structural assemblies through a spray booth which coats the assemblies top and bottom at the same time. A crane takes assemblies from production and cleaning, lays them directly on the conveyor. The conveyor moves at 5 fpm, has a



capacity of ¾ tons per linear foot. Mahon paints 200 tons of steel a day per shift, compared with 50 tons by the old manual system. The conveyor takes painted assemblies directly to shipping, outside the plant.

Cure: None! (for solid tires in this condition)
Remedy: Smart operators specify MONARCH SOLIDS made with exclusive MONOLOK* process!

Hundreds of industrial tires fail every day because they are used under conditions for which they were not designed. Result . . . dollars lost for downtime, excessive maintenance and early replacement. Consider your requirements . . . do they call for truck operation over loose scrap . . . through brine and acid solutions . . . over rough surfaces . . . or under conditions of excessive heat? These are the critical operating factors that cause premature rim separation. Check with your Monarch representative today . . . he will prove to you that MONARCH MONOLOK tires will last longer in your plant.

10183-MR

*MONOLOK . . . Monarch's revolutionary new process bonds a tough new rubber to metal permanently. Both **Mono-Cushion** and **Universal** tires are made by this method.

THE MONARCH RUBBER COMPANY
210 Lincoln Park
Hartville, Ohio

7-225 General Motors Bldg.
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4140 West Fullerton
Chicago 39, Ill.

Western Warehouse
Reno, Nevada

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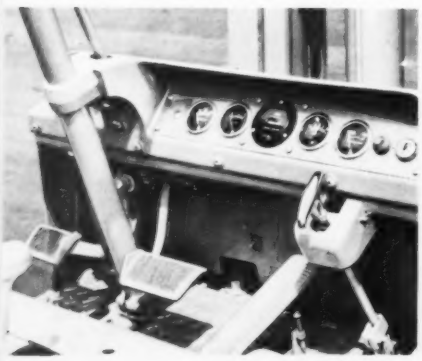
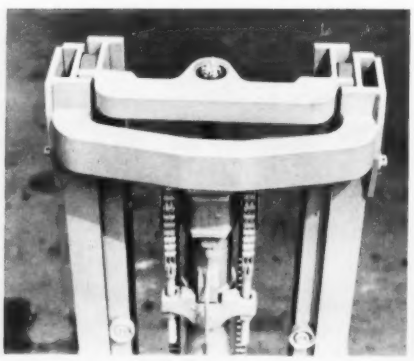
Circle 124 →

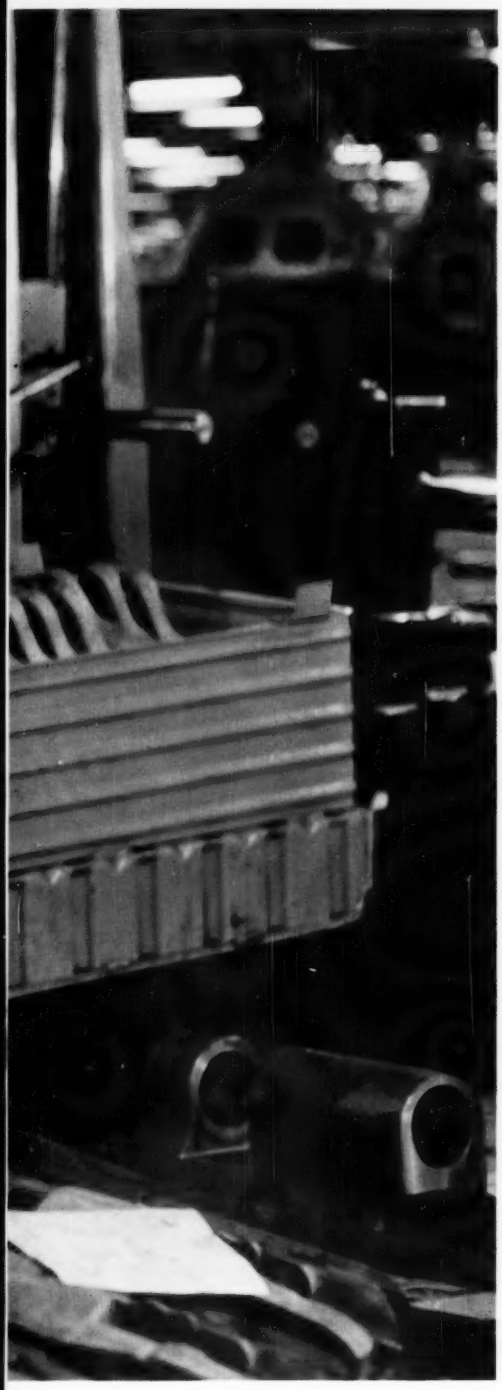
Fast, safe operation • centrally located controls • protected instrument panel • separated ignition key and starter switch • reinforced steering column bracket • automotive type inching, brake pedals.



Low seating position on G54 speeds trailer loading and increases safety. Seating height of 37" and overall height of 71" affords the driver plenty of headroom for safer operation.

Double I-beam on mast affords greater strength and stability, and less deflection. Exclusive side thrust rollers for mast and carriage assure frictionless lifting action at all times.





YALE OFFERS: FIRST COMPACT GAS LIFT TRUCKS

• Solid or pneumatic-tired • 3000, 4000, 5000 lb. capacity • Gasoline or LP-Gas powered • 52 HP engine in solid-tired model, 72 HP engine in pneumatic-tired model • New, improved automatic torque transmission.

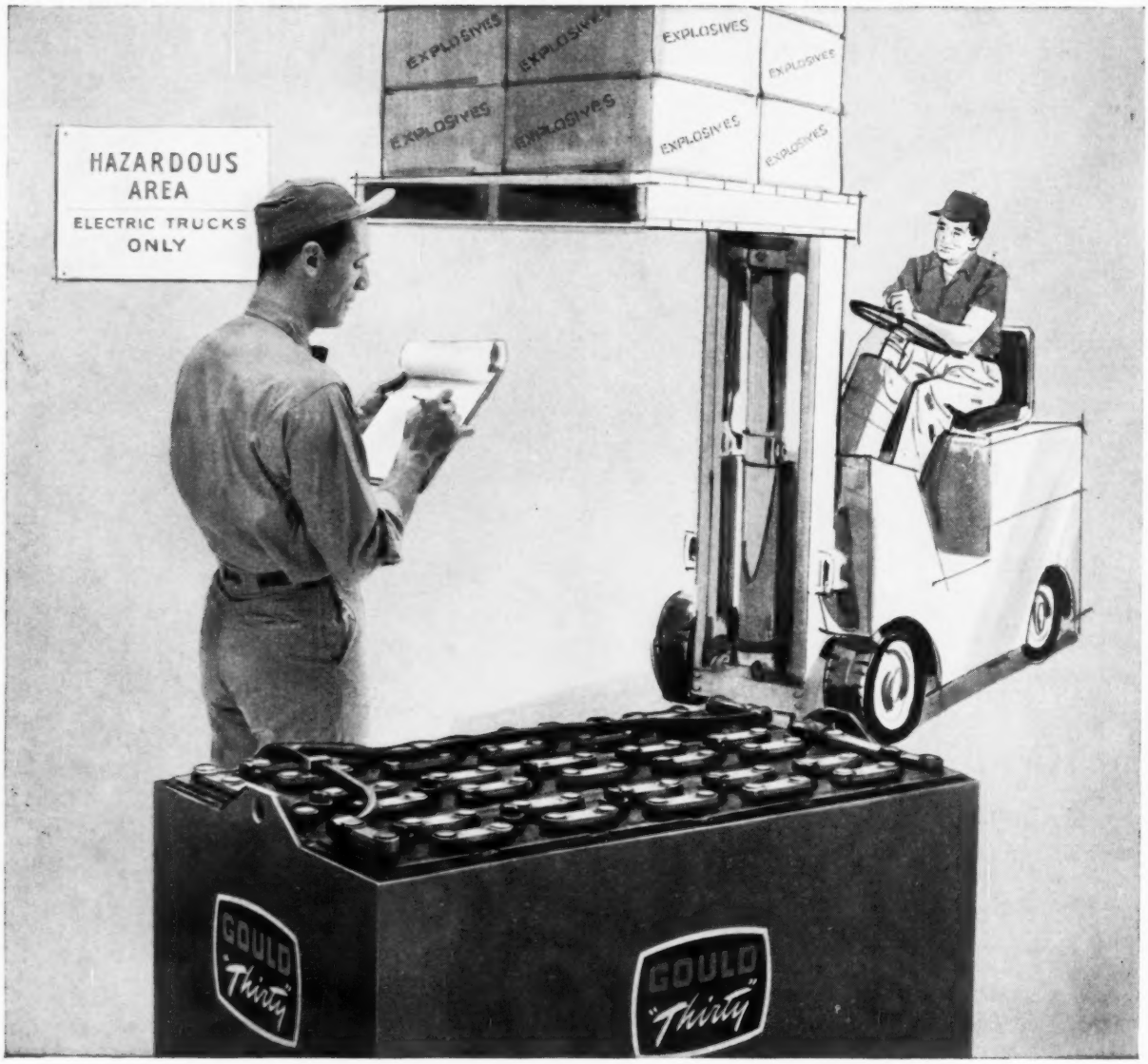
You get compactness and speed for faster, safer operation cycle from the Yale G54 series gas trucks. Lifting is a job the Yale Compact does fast . . . from 75 to 80 FPM. Its controlled lowering speed ranges from 55 to 80 FPM. You have full lifting speed at all times, plus increased pump life, assured by the patented super-charged hydraulic tank. You easily adjust the exclusive mechanical inching control to your individual operational requirements. What's more, Yale Compact offers you greater safety, with self-energizing, self-adjusting brakes and wheels. Operation is easier and more efficient. You operate all hydraulic attachments of the Yale Compact with only one exclusive, multi-function control handle.

Flexible lease and finance plans are available to put this truck to work for you immediately.

Yale Materials Handling Division, Dept. G-102, Phila. 15.
A Division of The Yale & Towne Manufacturing Company.

Safe ride and shock reduction, better stability, and a self-righting effect come from Yale's new steering axle design. Steering axle mounts on two 2" diameter articulating pins.

YALE®
INDUSTRIAL LIFT TRUCKS
TRACTOR SHOVELS · HOISTS
YALE & TOWNE



Electric Trucks are SAFER

Battery-powered electric trucks eliminate the need for storing gasoline or bottled gas for refueling. The "spark-enclosed" electric truck will operate safely in atmospheres of flammable gases, dangerous vapors and dusts. Fire hazards are greatly reduced, insurance rates are more favorable.

Add safety to a convincing list of other benefits—maneuverability, clean and quiet operation, lower operating costs—and you can easily see the main reason why users prefer battery-powered electric trucks for modern, efficient materials-handling jobs of all types.

Electric truck users generally agree on one other point, too—Gould Batteries for longer life. With the new Silconic Plate, Gould Batteries offer up to 25% longer life.

Join the list of users who prefer this ideal combination of electric trucks and Gould Batteries. For more information, write or call your local Gould representative. Ask for booklet "Why We Use Battery-Electric Industrial Trucks." Gould-National Batteries, Inc., First National Bank Building, St. Paul 1, Minnesota. In Canada, write to Gould-National Batteries of Canada, Ltd., 1819 Yonge Street, Toronto, Ontario.

***More Power to You from* GOULD**

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← Circle 124

MATERIAL HANDLING ENGINEERING

CALENDAR OF EVENTS

March 7-8

Packaging Assoc. of Canada
National Conference
King Edward Sheraton Hotel
Toronto

March 7-9

Early Spring Meetings
MHI-ITA
Sheraton Blackstone Hotel
Chicago

March 13-17

Integrated Materials Seminar
AMA Academy
Saranac Lake, N.Y.

March 20-31

Industrial Packaging Course
Purdue University
Lafayette, Indiana

April 3-7

MHEDA Distribution Warehousing Course
National Material Handling Center
Newport, R.I.

April 10-13

AMA 30th National Packaging Exposition
Lakefront Exposition Hall
Chicago

April 17-21

MHEDA Course: Metal Forming & Finishing Industry
National Material Handling Center
Newport, R.I.

May 9-11

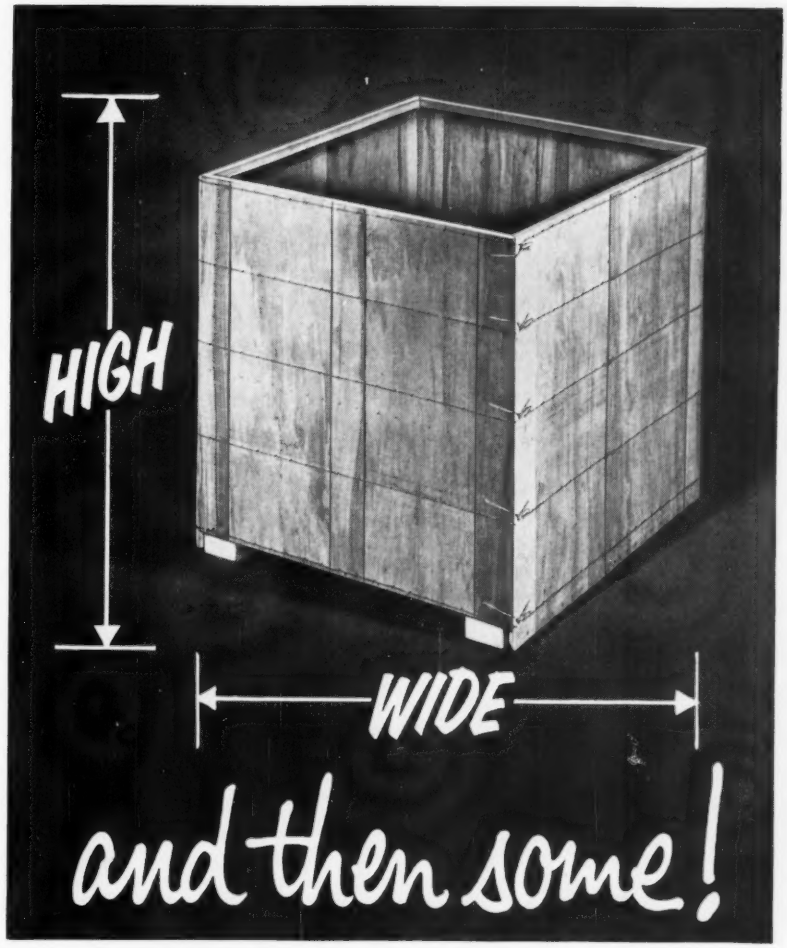
MHI Eastern States Show
Trade & Convention Center
Philadelphia

June 1-3

MHEDA Seventh Annual Convention
Denver-Hilton Hotel
Denver

June 11-23

Industrial Management Center Courses
Lake Placid Club
Essex County, N.Y.



SHIPPING SUPERSTRONG® CONTAINERS

WIREBOUND-PALLET-BOXES

Pound for pound, cube for cube, nothing can match Superstrong Wirebound Pallet Boxes for convenient, dependable cost-cutting materials handling and storage. Why not find out more about these strong, lightweight, re-usable containers—how they can work wonders for you?

WIREBOUND BOX DIVISION

St.Regis PAPER COMPANY

P.O. Box 4433 • Chicago 80, Illinois

REPRESENTATIVES IN ALL PRINCIPAL INDUSTRIAL AREAS

SEND for free Superstrong Wirebound information . . . call CAnal 6-0973 or write Dept. 300.

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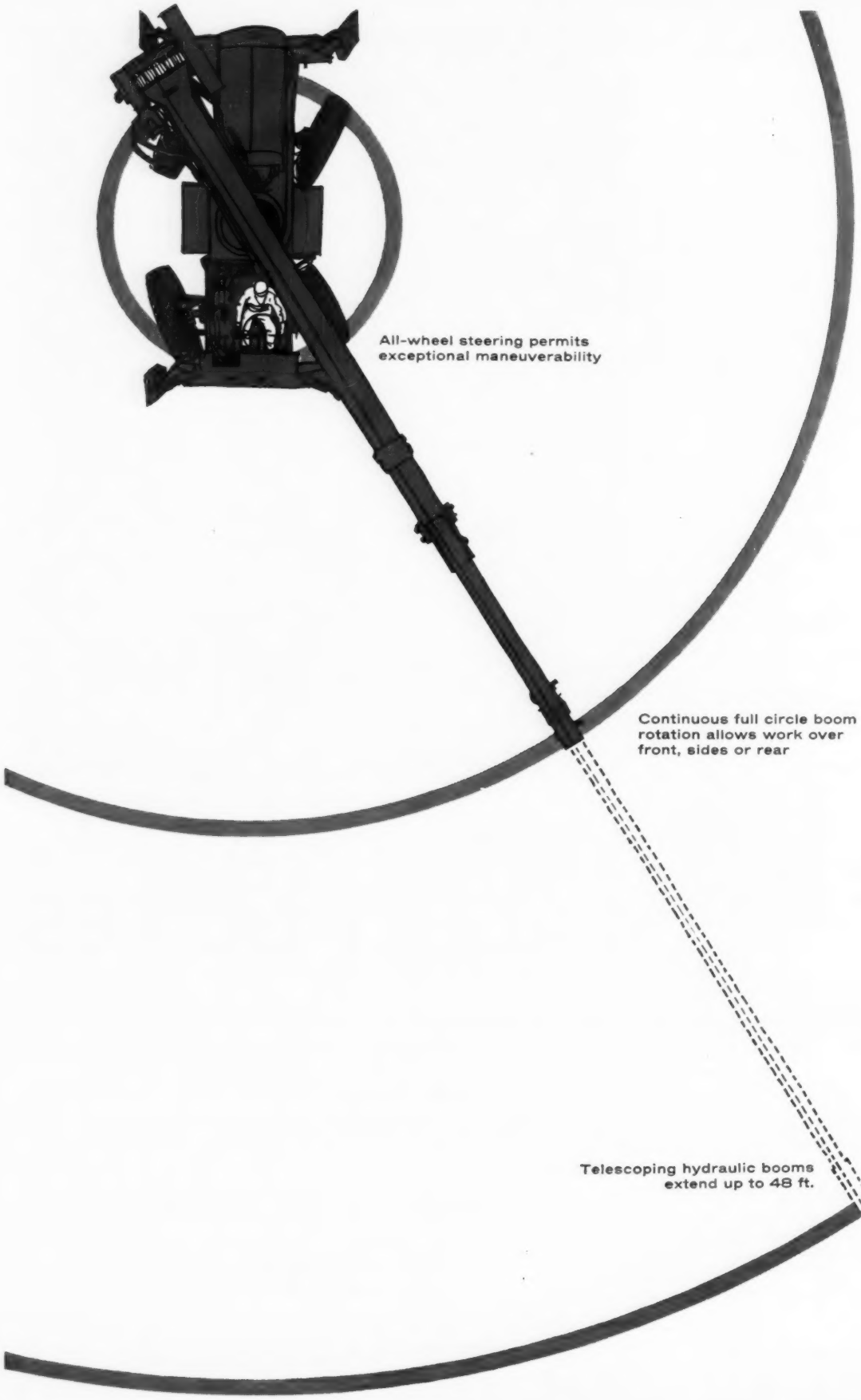
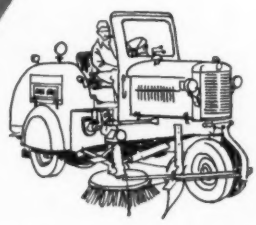

All-wheel steering permits exceptional maneuverability
Continuous full circle boom rotation allows work over front, sides or rear
Telescoping hydraulic booms extend up to 48 ft.

AUSTIN-WESTERN PRODUCTS SAVE TIME AND MONEY

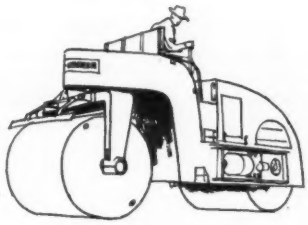
LIFT, CARRY AND PLACE IN AREAS WHERE OTHER CRANES CANNOT WORK

Tight, cramped working quarters and low overhead clearances pose no problem for Austin-Western hydraulic cranes. Because they've got the easy maneuverability of all-wheel steering *plus* long reach and big load capacity. Telescoping booms swing in continuous full circle on most models; extend to maximum 48-ft. length on Model 410. Safe, precise, easy to operate. Rubber-mounted, they work indoors or out equally well —most travel at speeds to 35 mph. A-W owners tell us they're perhaps *the* most useful multi-purpose pieces of equipment you can buy. They do just about everything . . . from plant maintenance or construction equipment repair to materials handling tasks. And they can be even more useful equipped with clamshell, dozer blade, snow plow, magnet, personnel platform, or other attachments. They come in 5 models—capacity ranges up to 11 tons; self-propelled, truck or stationary mountings. Learn just how profitable an A-W would be in your operation. Get facts from our distributor or write us direct.



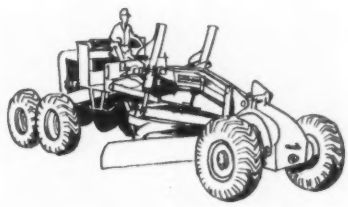
A-W MOTOR SWEEPERS

2 models: 2-yd. Model 40; 4-plus yd. Model 60. Safe, easy front steer; full visibility. Simplified design; broom and hopper in rear.



A-W COMPACTION EQUIPMENT

Variable weight tandem and 3-wheel rollers to 14 tons; 3½-6 ton portable tandem; Roller-Compactor; vibratory attachment for most 3-wheel rollers.



A-W POWER GRADERS

9 models; all-wheel drive and steer 4-wheel Pacers and 6-wheel Supers. Weight classifications to 30,000 lb., power ranges to 165 hp

Austin-Western CONSTRUCTION EQUIPMENT DIVISION, AURORA, ILL.
BALDWIN · LIMA · HAMILTON

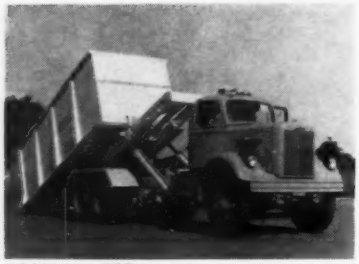
Circle 5 on Reader Service Card

For Materials Handling or Refuse Collection

DINOSAUR + DINOMASTER

Handles (in addition to DINOMASTER) containers eight through 40 cu. yd. capacity and over

When mounted on DINOSAUR, provides "No-Container-Haul" Service for refuse containers, one through eight cu. yds.



Besides serving DINOMASTER, the DINOSAUR picks up huge loads in big capacity containers . . .

DINOSAUR picks up DINOMASTER hydraulically for refuse container service.

extremely heavy materials in smaller containers . . .

DINOMASTER engages loaded container and lifts it into emptying position.

. . . and can even handle two containers at a time for additional flexibility.

Contents fall into body where up to 85,000 lb.* pressure packer plate compresses material to a fraction of its former volume.

*On 30 yd. Model

Mfd. Only By
DEMPSTER BROTHERS
Inc.
Dept. MH-3 KNOXVILLE 17, TENNESSEE

PART OF THE
DEMPSTER DUMPSTER® SYSTEMS

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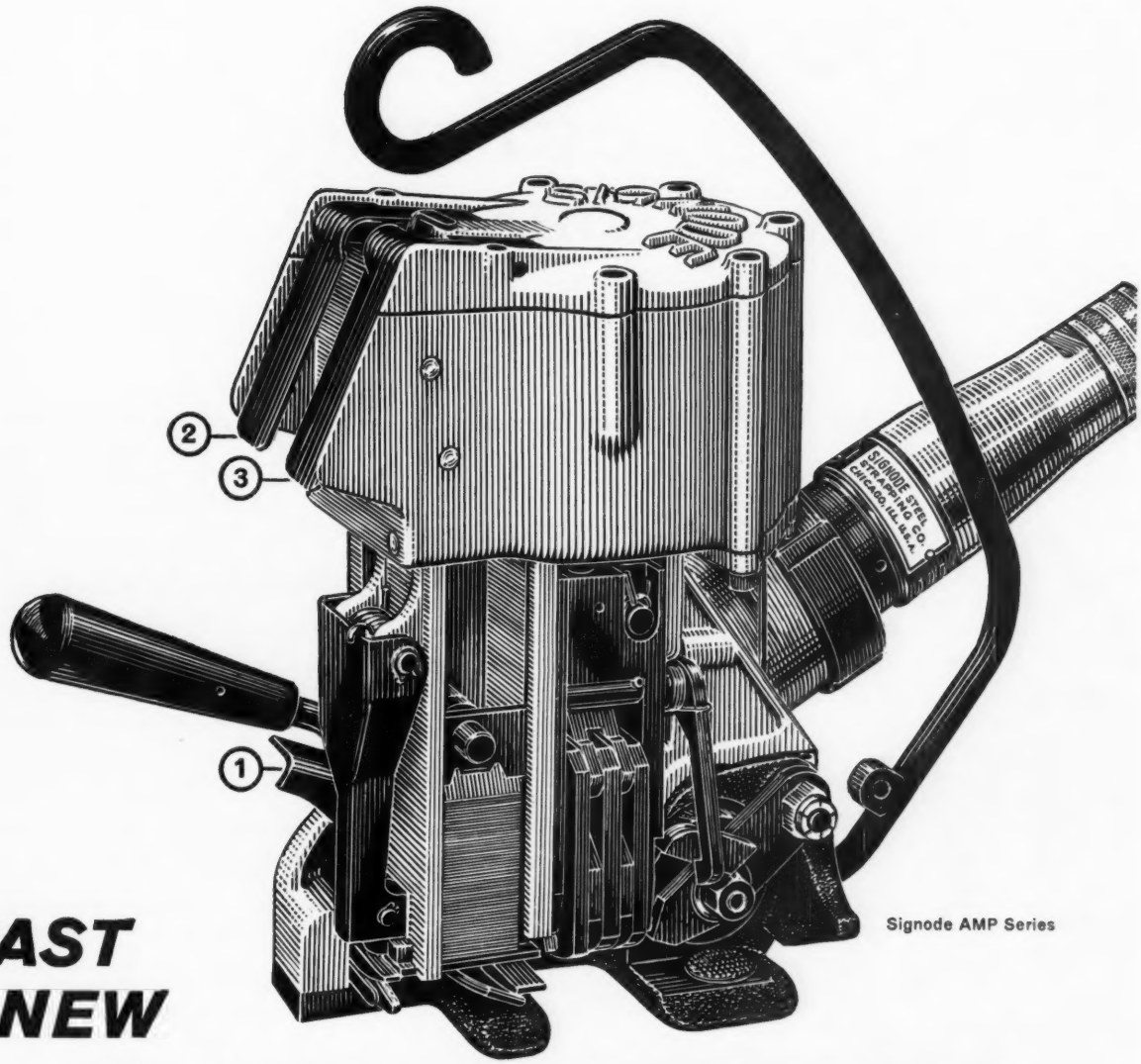
WRITE TODAY FOR COMPLETE INFORMATION



Signode AMP Series

FAST NEW all-power strapping tool

- Air power tensions, seals, and severs the strap.
- All the operator does is depress lever #1, insert the strapping, press the tensioning lever (#2), then the sealing-severing lever (#3) and remove the tool.
- Tensioning can be stopped (and held) at any time, as for the insertion of edge protectors.
- Uses new easy-loading Signode NESTACK seals that come in nested stacks (no retaining wire) that eliminate waste, spillage and delay.
- Weighs only 22 pounds, even though the base is steel for maximum durability.
- Compact balanced design and short base make tool easy to use on small as well as large surfaces.
- Comes equipped with universal suspension bracket that's quickly changed for strapping on top or side of package.
- Available now in models for ⅝" and ¾" strapping, .015" to .035" ga. Special high-tension models also available for brick, ingots, tin plate, etc.
- Tension is adjustable to 1200 lb. at 90 p.s.i., regular models.

To evaluate the savings you can obtain with this remarkable new tool in your own operations, call the Signode man near you or send for additional information.

SIGNODE
STEEL STRAPPING CO.
2618 North Western Avenue • Chicago 47, Illinois

Offices Coast to Coast. Foreign Subsidiaries and Distributors World-Wide
In Canada: Canadian Steel Strapping Co., Ltd., Montreal • Toronto

First in steel strapping

Circle **104** on Reader Service Card

COST CUTTING IDEAS

System Saves 2,500 Sq. Ft. Storage Area

A 40 percent cut in area needed for pipe storage! That's the cost-saving story at Yeary's a Jasper, Texas, lumber and building supply dealer.

Yeary's uses a fork truck to handle cast iron pipe on special pallets. The system has these merits:

- Speeds order picking.
- Simplifies handling of the awkward-shaped loads.

Pipe is handled on 3′ x 5′ pallets with side supports. The 4,000-lb. capacity fork truck has dual drive pneumatic tires. It can tier the pallets three high.

Yeary's receives and stores almost all its building materials on pallets. The fork truck handles concrete blocks, brick, roofing material, and prefabricated doors on 3′ x 3′ pallets. Millwork items such as window units and cabinets go on 4′ x 8′ pallets with side supports.

By fork truck handling of palletized materials, the company estimates it saves 2,500 sq. ft. of space.—*Clark Equipment Co.*

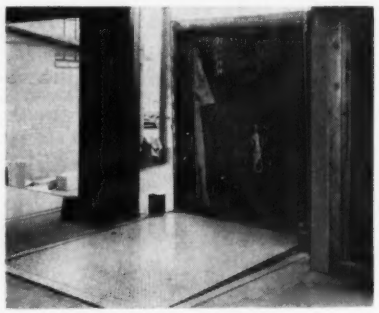
Circle **250** on Reader Service Card

Dock Modernization Proves Profitable

Is it sound and profitable to modernize docks in old buildings by installing permanent dock levelers?

The United Hardware Distributing Co. of Minneapolis, Minn. thinks it is. They point to a 12-percent cut in their shipping dock labor costs since they installed their levelers. Moreover, they expect them to repay their cost ($4,400) in a year or even less.

Formerly, the dock handled over 100 shipments and 50 trucks a day with 4 truck positions. Normal truck height variations made it impossible to service a large number of trucks with low lift pallet handling equipment. Short, loose-plate dockboards couldn't compensate for the differences in truck heights without steep grades. In winter, snow and ice built up, often



raised truck beds 16 inches above the dock.

With truck entry often impossible, loads were dropped at the

Continued on page 30

SPEED UP
materials movement
REDUCE
your handling costs
BOOST
overall handling efficiency

do it with a UNIT MOBILE CRANE

With materials movement taking a bigger percentage of the production dollar every day and building costs still increasing, thousands of modern manufacturing plants are turning to low cost outdoor space for storage. New protective wrappings, coatings, and sprays make outside storage possible; UNIT Mobile Cranes, offering you all these "yard-proved" features, make it practical.

- **Self-propelled** and mounted on rubber, a UNIT Mobile Crane can service widely scattered storage areas.
- **Hydraulic steering,** air brakes, and an air-actuated transmission enable the crane to get in and out of tight quarters with little effort.
- **ONE MAN control** for all crane operations, plus travel and steering, from the operator's cab.
- **Short turning radius** and full 360° swing assure tight-area working ease.
- **Full Vision Cab** permits operator to see in **all** directions . . . promotes safety . . . increases efficiency.
- **Disc-type clutches** provide uniform, positive engagement . . . loads are picked up smoothly and evenly.
- **Powered Boom** .. Power raised and controlled lowering of the boom means safe, precise load handling.

UNIT *Mobile Cranes are available in two sizes — the 15-ton Model 357 and the 20-ton Model 1520T. Plus, a complete line of crawler and truck cranes. Your UNIT dealer has complete information — call him soon.*

UNIT

UNIT CRANE & SHOVEL CORP.

6531 W. Burnham St., Milwaukee 19, Wisconsin

Circle **116** on Reader Service Card

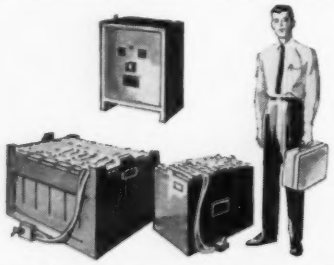
EXIDE POWER PACKAGE

Exide Industrial Marketing Division, The Electric Storage Battery Company, Philadelphia 20, Pa.

HOW MUCH EXTRA BATTERY LIFE CAN YOU GET?

You may be getting good battery life now. But the fact is that almost every battery can give better life if certain rather simple conditions are met.

Helping you to get maximum life, and therefore greatest economy, from your batteries is part of the Exide Power Package. The first step is selecting the particular type and capacity battery to fit the job. Your Exide man will recommend a battery capable of providing adequate power without the need for deep discharging. Knowing how to do this accurately is part of his special skill.



The Exide Power Package: Broadest choice of all types of batteries and chargers to meet all requirements, plus factory-quality service for both batteries and chargers.

To meet your particular requirements, he can draw from the broadest line of batteries for industrial truck power, including Exide-Ironclad with tubular positive plate construction; Exide-Powerclad premium pasted plate; and the improved Exide nickel-iron-alkaline (invented by Thomas A. Edison).

Second, it is important that the charger be able to recharge the battery completely within the allotted time, and at the desired rate. If a battery isn't adequately charged, it loses efficiency and its power output is reduced. At the same time, you must guard against overcharging too. Play safe. Ask your Exide man to recommend the right size and type Exide charger when you buy your Exide battery.

Third, make sure your batteries receive good upkeep. This involves more than just routine cleaning and watering. It means periodic inspection and checking by battery maintenance engineers. Exide offers this service at a reasonable fee. Exide service men will help you set up good battery maintenance schedules. They will diagnose problems which might develop—show you whether the cause is in the truck, the charger, the application, or the maintenance. And they will take care of any repairs or adjustments to batteries or chargers which might be called for. You get complete battery and charger service from one source, fast, thorough, dependable.

The combined effects of these three basic parts of the Exide Power Package mean not only longer battery life, but greater battery economy year after year. Find out exactly how you can benefit. Write Exide Industrial Marketing Division, The Electric Storage Battery Company, Philadelphia 20, Pa.

Simplified electricity bulletin. Do you want to know how storage batteries work and what goes on as they charge and discharge? Send for this detailed bulletin. It's yours free. Also contains tips on how to keep batteries in top operating condition.

Exide®

Circle 41 on Reader Service Card

Out of Storage for Assembly...in 3 minutes

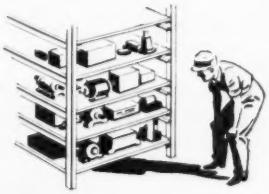
TRIAX® RETRIEVERS® give random storage of boxes, pans and baskets

Push-key storage sends load to any available opening . . . offers 100% selectivity.

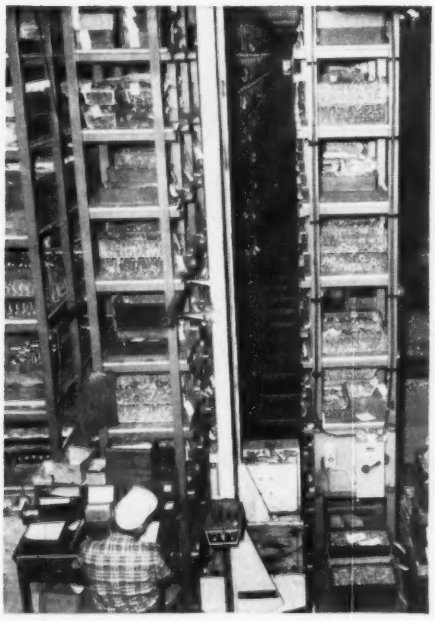
At the Mariemont, Ohio, Plant of American Standard, two Retriever units are used to handle a wide variety of small parts until needed on the assembly line. Economical runs of machined parts are held in storage along with small purchase parts. Upon release of assembly orders all parts are instantly available.

INVENTORY SAVINGS REALIZED . . .

Physical inventory time is greatly reduced and damage to or loss of parts is minimized, permitting an overall reduction of total inventory.



Floor-to-ceiling storage makes maximum use of available space.



A wide variety of parts and containers are stored on slab pallets, at pin-point location.

One operator programs the two units and carries out record keeping during the cycles.

THE TRIAX COMPANY

SWeetbriar 1-9800

11955 SHAKER BLVD. • CLEVELAND 20, OHIO

Circle 111 on Reader Service Card

Heavy Duty
CLEVELAND
CONTAINERS...

for both

Inter-Plant and Regular Shipments

There's real economy when you transfer, store, or ship in these heavy duty containers and cores:

First — because of the rugged construction, as illustrated above with self-locking metal ends, they can be used over and over again. The heavy wall is spirally wound with multiple layers of high grade paperboard, closely butted and evenly bonded to give an extra measure of strength and utility.

Second — our strategically located plants and modern equipment make prompt delivery possible at lower unit cost.

Made in lengths and diameters to meet the needs of specific products. Typical uses are the packaging of metal strips, shafts, rods, tubes and other metal parts. They are also suitable when used as cores for paper rolls and fabrics, bodies for reels, and liners for metal drums.

Write for our latest packaging brochure.

THE
CLEVELAND CONTAINER
COMPANY

6201 BARBERTON AVE. • CLEVELAND 2, OHIO

ALL-FIBRE CANS · COMBINATION METAL AND PAPER CANS
SPIRALLY WOUND TUBES AND CORES FOR ALL PURPOSES

CLEVELAND CONTAINER CANADA, LIMITED
Plants & Sales Offices: Toronto & Prescott, Ont. · Sales Office: Montreal

Plants and Sales Offices: Cleveland, Chicago, Memphis, Dallas, Los Angeles, Plymouth, Wis., Jamesburg, N. J., Greensboro, N. C.

Sales Offices: Detroit, New York City, West Hartford, Rochester, N. Y., Washington, D.C.

•

Abrasive Division at Cleveland

Circle **25** on Reader Service Card

COST CUTTING IDEAS

dock edge. Truck drivers had to move the goods into the truck by hand. This slow system had one result: the four truck positions stayed full longer. Work halted until the trucks could be moved.

The new dockboard installation has 8'-long, 6'-wide ramps. They guarantee smooth, fast entry into all trucks, winter time too, says United. All shipments are moved in unitized loads directly into the truck. Loading time has been drastically cut, dock tie-ups eliminated, with better utilization resulting in high cost dock labor.—*The Kelley Co.*

Circle **251** on Reader Service Card

Stock-piling Work Cut 50 Percent

Ideal Builders Supply and Fuel Co., Cleveland, retails hard building materials. It makes 6 million cement building blocks of various sizes each year. Ninety percent of

the production is in standard 8-inch and 12-inch blocks.

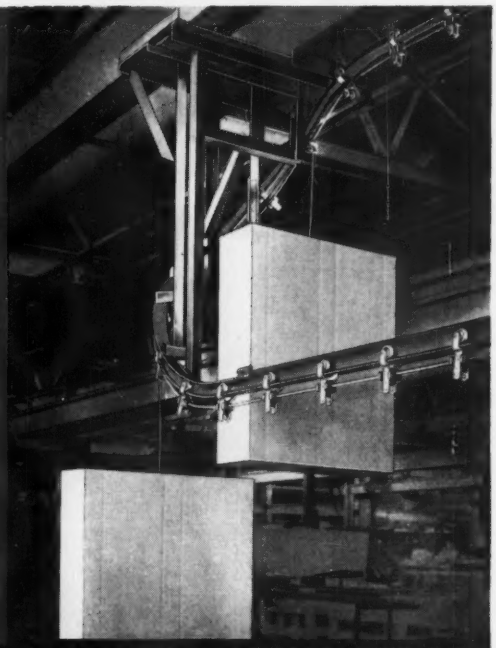
Because half of the plant's man-hours are used in moving blocks, Ideal operates a fleet of lift trucks. They speed production and storage.

An air hoist removes the greenware (uncured blocks) from the block machine and places them on metal racks. Lift trucks pick up the racks, deposit them in kilns. When the blocks are dry, fork lift trucks again pick up the loaded racks and take the blocks to a cubing area. Here, the racks are unloaded by air hoist and the blocks are stacked in cubes. Next, the blocks go to the storage area for curing before being loaded on

Continued on page 32

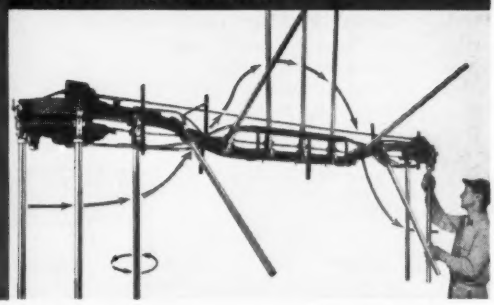
2 BASIC PATENT FEATURES

. . . . . with unlimited applications



Bush-Lock permits spiraled end turn for large parts clearance on close centered parallel tracks.

Bush-Lock's floating action permits trolleys to follow a special path while the cable travels in a straight line. No other conveyor can do this.



The low-cost efficiency that industry finds in long-lived Bush-Lock cable conveyors is obtainable in no other overhead system. For only Buschman patents cover these essentials: 1) straight-through continuous power cable—100-ft. lengths without a joint or link; 2) radially-free trolley alignment with track.

1. STRONG *PULLING* ELEMENT is the straight-through continuous cable . . . in 100-ft. lengths, with half buttons for quick coupling. Cylindrical buttons are swaged on cable, float free within trolley cavities, relieve any spiral twist and ensure true alignment with track. Only in Bush-Lock can the cable pull straight, even when path of trolleys and load is diverted. No restraining screws and clamps, no built-in strains, no links and wear points.

2. ROTARY *FLOATING* TROLLEY ACTION . . . Mating half section blocks bolt easily around swaged buttons to form cylindrical *cavity* in which the button rides free. This prevents cable strain of the clamped design. Trolleys align themselves without restraint. *The cable has factory built-in lubrication.* Bush-Lock cavity is pressure lubricated.

Bush-Lock features can be engineered to your needs, as they are in thousands of other plants. Get further details and see how they can serve *you*. Write for Engineering Data No. 52A, to The E. W. Buschman Company, 4450 Clifton Ave., Cincinnati 32, Ohio.

• • •

Buschman
CONVEYORS

Complete Conveyor Systems for all Types of Industries:
Engineered, Manufactured, Installed.
Representatives in Principal Cities; See Yellow Pages. 370

Circle 19 on Reader Service Card

FREE 2 VALUABLE GUIDES

TO AID YOU WHEN SELECTING PNEUMATIC CONVEYING AND BULK STORAGE TANKS

BULLETIN M-260—12 page DAY pneumatic conveying guide just off the press. Discusses types of systems, illustrates and diagrams high and low density arrangements, shows equipment and tells "why" and "wherefore" of all types of pneumatic conveying including so-called fluidizing systems.

BULLETIN 574—12 pages, describes horizontal and vertical storage tanks. Points out savings and is filled with photos of various installations plus description of auxiliary equipment.

Whatever your pneumatic conveying or bulk storage problem, look first in these DAY bulletins. They are valuable aids in selecting and ordering the right equipment for your plant. For your free copies use reader service card of this magazine or write direct toDAY.

The **DAY** *Company*

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Circle **37** on Reader Service Card

COST CUTTING IDEAS

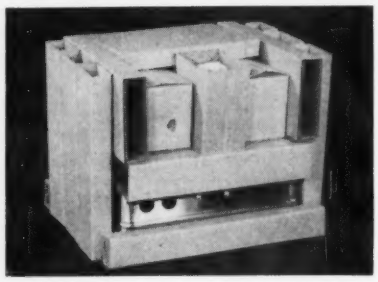
flatbed trucks. Formerly, two lift trucks transported the loads to storage. Now, one lift truck with 4-ton capacity, and equipped with special 12-tine block forks, does the same job. By carrying a double load, Ideal says the truck has cut in half man-hours and machine-hours on this stock piling operation. It can carry two hundred and sixteen 8-inch blocks, or one hundred and thirty-two 12-inch blocks to storage in one trip. Ideal says the truck operates 18 to 20 hours at a stretch, makes about 120 quarter-mile round-trips a day between production and storage. That's one trip every 7½ minutes. Average load: 6,896 lb. The blocks are stacked 16-feet high in open storage area. Tines on the special block forks are so arranged that they can pick up 2- or 3-core blocks without adjustment.—*Towmotor Corp.*

Circle **252** on Reader Service Card

Packaging Costs Reduced One-Third

Cory Corporation, Chicago, used to use 21 pieces of corrugated interior packing when they shipped one of their institutional coffee makers.

Today, they ship it with only 9 interior pieces. They completely



redesigned the package with these results:

- Easier handling.
- Less tare weight.
- One-third lower overall cost.

Cory says the new containers holds up well in shipment.—*Gaylord Container Corp.*

Circle **253** on Reader Service Card

Continued on page 34

Set the dial and let 'em roll!

FROM RECEIVING TO PRODUCTION TO SHIPPING . . . VIA *TOWMATIC!!

AUTOMATIC SWITCHING TOWVEYORS? We custom-make them to fit your exact specifications . . . from small detachable selector units offering up to six dispatching points, to large elaborate units offering up to 100 different dispatching points! We call it TOWMATIC. Since its inception, several years ago, Webb has installed *more* automatic switching towveyors *than any other manufacturer.*

TOWMATIC, the latest innovation in Towveyors, allows the cart to travel from any station to any other predetermined station on the power loop. The carts can be placed or removed from the power loop at any point by raising or lowering the tow-pin. *It is never necessary to wait for power!* The carts can be engaged at any position on the loop and are immediately on their way! Results? Materials are automatically moved from one area of the plant or warehouse to any other area . . . with no personal escort!

Towveyor installations are custom-made to suit the specific layout for which it is intended. So, whether you are operating out of a two-car garage, or a million square foot establishment, it will pay you to investigate the possibilities of Towmatic. Call a Webb Engineer today . . . he'll show you how to increase your profits through efficient materials handling methods.

*REGISTERED TRADE NAME

SPECIALISTS IN CUSTOM CONVEYOR SYSTEMS

JERVIS B. WEBB COMPANY

8951 ALPINE AVENUE • DETROIT 4, MICHIGAN

OFFICES IN ALL PRINCIPAL CITIES

Circle **120** on Reader Service Card

Barrett Tractorox with first-of-its-kind features

New and different? Look at this new Barrett Tractorox. See its ahead-of-the-rest advantages:

Smoother power—radically new gear drive, revolves in constant oil bath. Adjustable time-delay mechanism means smooth power acceleration. High torque motor.

Greater efficiency (and less maintenance)—control and power leads do not move. Gear drive is single-piece unit, easily removed. Motor, transmission and drive wheel in balanced vertical column. Simple mechanisms throughout, easily accessible.

New conveniences—on-the-handle dual controls. Acceleration and braking unitized to prevent simultaneous operation...reduces brake wear and motor overloads. Low 7-inch standing platform.

Again, Barrett engineers a Tractorox to *your* job. Three models available: Stand-up Riding: operatorless Guide-O-Matic® or Radox® remote-controlled. *Bulletin 588 gives you complete information. Ask for it.*

One man does a two-man job with this remote-controlled Radox Model.

Guide-O-Matic equipped Tractorox engineered for automated materials handling.

BARRETT

Barrett-Cravens Company, 614 Dundee Road, Northbrook, Illinois. Representatives in All Principal Cities.

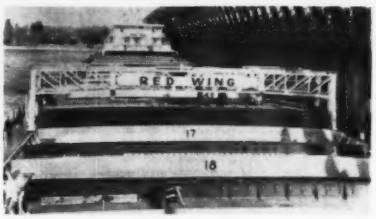
Circle **20** on Reader Service Card

COST CUTTING IDEAS

Crane Moves 100 Tons In Only 10 Minutes

Twenty huge hatch covers, weighing 5 tons apiece, are nested into position on the SS *Red Wing* in just minutes.

The method? A 10-ton traveling crane. It travels on 63-ft. rail centers. A multiple hook assembly engages four eye fasteners to lift and



transport each cover. Covers are kept in four deck locations.

The freighter is 730 feet long. Capacity: 25,500 tons of iron ore or 925,000 bu. of grain.

Besides the crane, the ship has six automatic tension mooring winches and eight remote control masters used with them. Two store cranes complete the handling equipment.

The remote control units for the mooring winch are deck mounted. They're fixed so the operator can see ship and dockside operations during docking or while negotiating locks. Switches on the remote control units are of the revolving-segment, finger type, with good wiping action.

To help assure water tightness, all the controls are all-steel weldments with gasketed entrances.—*Lake Shore, Inc.*

Circle **254** on Reader Service Card

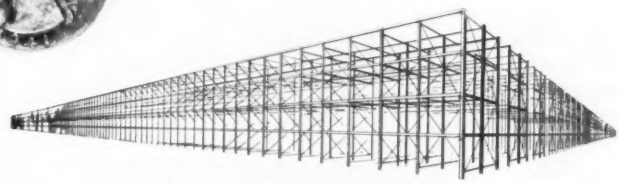
Extensible Paper Bags Cut Costs 18 Percent

Paulson Dehydrated Products Co., Luverne, Minn. found that they almost always got back 10 broken bags from each truckload of alfalfa meal they sent out. Each bag weighed 50 lb., making the yearly waste substantial. It

Continued on page 36

NOW YOU CAN BUY

STURDI-BILT STORAGE RACKS ON A TIME-PAY PLAN



That's right! Call on us today . . . tell us your storage problems . . . we'll have a rack specialist in your place pronto. With this new plan you can have all the racks you need and take as long as FIVE YEARS to pay. Whether your installation will add up to $200 or $200,000 you can "pay-as-you-profit" because your monthly payments can easily be less than the savings you will make with proper racks to fit your needs when you need them.

So, don't jeopardize your own working capital . . . use the STURDI-BILT deferred payment plan and solve tomorrow's storage problems today. Only STURDI-BILT can offer such a generous plan . . . another symbol of leadership. Only STURDI-BILT storage racks give you all these benefits:

- **unmatched safety and stability**
- **fast, easy assembly**
- **complete adjustability**
- **add-a-section versatility**
- **patented FLOAT-WEDGE construction**

Let this symbol be your guide

STURDI BILT
Racks the goods of the world

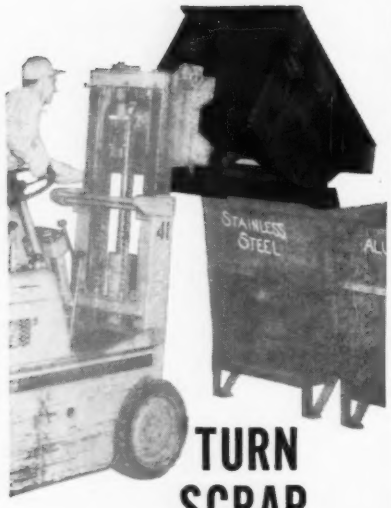
BUY BETTER—BUY STURDI-BILT

STURDI-BILT Material Handling Division
Union Asbestos and Rubber Company
332 South Michigan Avenue, Dept. MHE-31
Chicago 4, Illinois

☐ Please send me data on the TIME-PAY plan
☐ Please send your helpful booklet, STORAGE PLANNING GUIDE

NAME.....TITLE.....
COMPANY.....
ADDRESS.....
CITY.....ZONE.....STATE.....

Circle **101** on Reader Service Card



TURN SCRAP HANDLING INTO A PROFIT!

Segregated scrap brings higher prices. Add the convenience of easier collection and easier handling, and in most cases you can convert scrap handling from a loss to a profit.

DUMPS ITSELF

RIGHTS ITSELF

LOCKS ITSELF

Hundreds of industries now use Roura Hoppers to collect scrap metal. They're placed alongside machines or in strategic locations. When full, a lift truck picks up the loaded hopper . . . transports it to scrap bin or freight car . . . flips the latch . . . and the hopper *automatically* dumps itself, rights itself, locks itself.

Roura Hoppers are made in eight standard sizes . . . in ½ to 4 yard capacities. Ruggedly built of 3/16" steel plate with continuous arc-welded seams, the hoppers give years of continuous service. Heavier plate, stainless, aluminum or galvanized is also available if desired. Standard models shipped from stock.

Specifications are available without obligation. Phone us collect at Townsend 8-3560 or use the handy coupon.

WANT MORE DETAILS? Just clip this coupon to your letterhead, sign your name and mail to:

ROURA IRON WORKS, INC.
1411 Woodland Ave., Detroit 11, Mich.

Circle **96** on Reader Service Card

COST CUTTING IDEAS

amounted to 2 percent of the bagged alfalfa shipped each year. Each time a broken bag came back, it meant resacking, and a new invoice.

Paulson turned to an extensible paper bag. The extensible paper has greater strength built into it in the manufacturing process. This added toughness is provided by compressing and compacting the paper in the drying process. The finished product has added stretch.

The bags used at Paulson measure 14" x 4½" x 36", are of the sewn open-mouth type. Their old bags were of 3 plys of 50-lb.-basis-weight stock. The new extensibles need only 2 plys of 50-lb. stock. This gives Paulson a savings of 18 percent. Company trucks haul larger payloads. And Paulson reports another advantage: the bottom bags do not break when they stack them for hand-truck transport within the plant.—*Clupak, Inc.*

Circle **255** on Reader Service Card

Tractor Loaders Easily Spot Railroad Cars

Railroad officials were skeptical when Pacific Coast Bull Terminals, Ltd. decided to replace a diesel locomotive with tractor loaders.

But when the company opened its Port Moody Terminal in March, 1960, two tractor loaders were there to spot railroad cars. The tractors have special railroad car couplings fittted to their lift arms. A torque converter drive enables them to spot up to seven 70-ton loaded cars at a time. The working area is blacktopped level with the top of the rails.

They've moved cars loaded with coal, grain, sulphur, wood chips,

iron ore and potash from the marshalling yard, up a 3-percent grade, to a rotary car dumper. From there, a conveyor takes the material to ships moored at the dock.

The Terminal also brought buckets for the loaders. This enables the terminal to use the loaders to clean up spills around the conveyors and the yard after loading ships.—*Allis-Chalmers.*

Circle **256** on Reader Service Card

Economical Grain Storage

They're making field tests of a brand new system for storing grain under partial vacuum at the Rice-Powell grain elevators, Chicago. They use huge plastic sausages for flat storage, avoiding the need for structures.

The savings: Rice-Powell says you can store grain for an investment of 5 cents a bushel compared to building costs of about 30 cents a bushel.

The illustration contrasts the old and new. In the foreground is a 25,000-bushel Koroseal vinyl

sausage. It hugs the grain inside, because a pneumatic grain handler pumped the air out. For storage above ground, you only have to smooth the ground or even it with a few inches of sand. No concrete base or metal framework needed.

With the air withdrawn, the roof of the bag collapses. The grain be-

Continued on page 41

World's most advanced Power Sweeper

The all-new Tennant "85"

Practically perfect dust control!

HUGE ENCLOSED FILTER (9620 sq. in.) has 3 times the filtering area of any other industrial sweeper.

BIG 16" WHEELS provide good traction, absorb shock; allow easy travel over rough areas.

"AISLE-DESIGNED". Sweeps 53" path (total); ideal for cleaning most aisles in one round trip.

Here's a *truly modern* sweeper . . . one with many features never offered before.

NEW. Constant-speed fan, side brush, and main brush. Powered so speed of rotation is constant regardless of travel speed. Sweeps equally clean at slow or fast speeds.

NEW. Giant enclosed filter gives virtually dust-free sweeping . . . *anywhere.*

NEW. Floating brush suspension; brush automatically follows uneven surfaces.

NEW. Pull-through vacuum system; removes dust *before* it goes through fan.

NEW. Lower silhouette. Operator sits safely at rear, where he can see side brush without strain.

NEW. Filter-shaker discharges dust into hopper at the touch of a button.

Heavy-Duty. All-welded frame of 3/16" steel plate. All parts accessible for inspection and maintenance.

Plus other features for safe, easy operation. Your hands stay on the wheel because heel-and-toe pedal gives instant forward and reverse control without shifting. Rear wheel steering for 67 inch turning radius. Foot brake makes it possible to sweep downhill. 12 cubic foot dirt hopper empties hydraulically in 10 seconds.

WRITE TODAY *for photos and performance data. G. H. Tennant Co., 707C N. Lilac Drive, Minneapolis 22, Minnesota.*

TENNANT

Industry's Most Widely Used
POWER SWEEPERS

Circle **112** on Reader Service Card

Destination Portland . . .

"It's the end of the day. But for these seven Clark trucks it's only the beginning . . . the beginning of a long life of service for five Portland companies.

"They go out of here like this day after day, load after load, to places all over the country . . . places like Oregon, Maine, Florida, California. When a man wants a lift truck that works harder, handles easier and lasts longer, he picks a Clark."

CLARK® EQUIPMENT

Industrial Truck Division
CLARK EQUIPMENT COMPANY
Battle Creek, Michigan

For full details,
see your local Clark Dealer
or circle 77 on reader service card

DOES MATERIAL HANDLING COST YOU

☐ 5% ☐ 10% ☐ 20%

. . . or don't you know?

High or low . . . whatever your cost, Olson Conveyors can reduce it through renewed efficiency.

Your particular solution . . . as suggested in the drawing below . . . might be in a completely integrated system for receiving, sorting, marking and storing merchandise . . . followed by order picking and assembly, billing, packaging and dispatching to the shipping dock.

Or . . . it may be in just a single conveyor—one unit to ease handling on one key operation.

Backed by 50 years of specialized conveyor experience, Olson engineers can spot material handling "bottlenecks" which you may not recognize. They are trained in handling methods and efficiency. And they know how to design and build high quality conveying equipment.

Olson Conveyors are helping to solve material handling problems in mail order plants, department stores, wholesale houses and variety stores. They reduce costs, lighten work and speed inventory turnover.

Tell us your handling problem—our engineers will be glad to furnish recommendations free. And ask for new Catalog 1000C describing Olson systems and units.

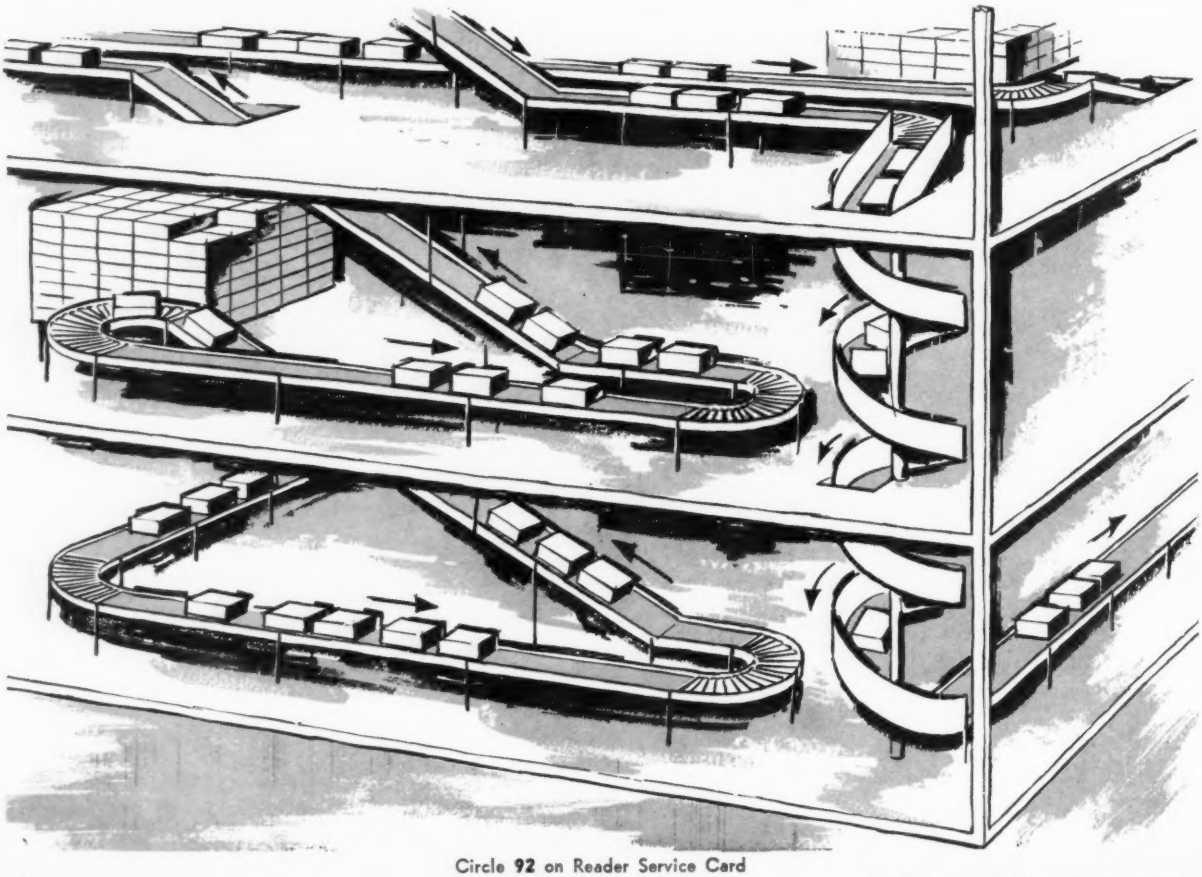
Olson

CONVEYORS

SAMUEL OLSON MFG. CO., INC.

DIVISION OF CHERRY-BURRELL CORPORATION

2426 BLOOMINGDALE AVENUE • CHICAGO 47, ILLINOIS



Circle **92** on Reader Service Card

comes as hard as rock. The partial vacuum removes enough oxygen to prevent growth of molds, other destructive elements. Insects cannot live in the atmosphere. Elevator operators can store the bags underground just by burying them.

The sausage is 100 ft. long and wide, weighs 100 lb. empty. When filled with air at a water pressure of 2 inches, it weighs 15,000 lb. enabling it to withstand winds of great force. Engineers say the sausage can be made in capacities from 5,000 to 50,000 bushels.—*B.F. Goodrich Industrial Products Co.*

Circle **257** on Reader Service Card

Airline Streamlines Ground Transportation

Eleven electric-powered 3-wheel vehicles move people, baggage, and supplies around airports for Western Air Lines. Western uses the vehicles at Los Angeles, Las Vegas, Phoenix, Reno, San Diego, and Burbank.

Although they bought the vehicles for, as they put it, "hot shot deliveries and general transportation," the airline discovered that the vehicles have three main advantages over larger special-purpose units. The little ones are more

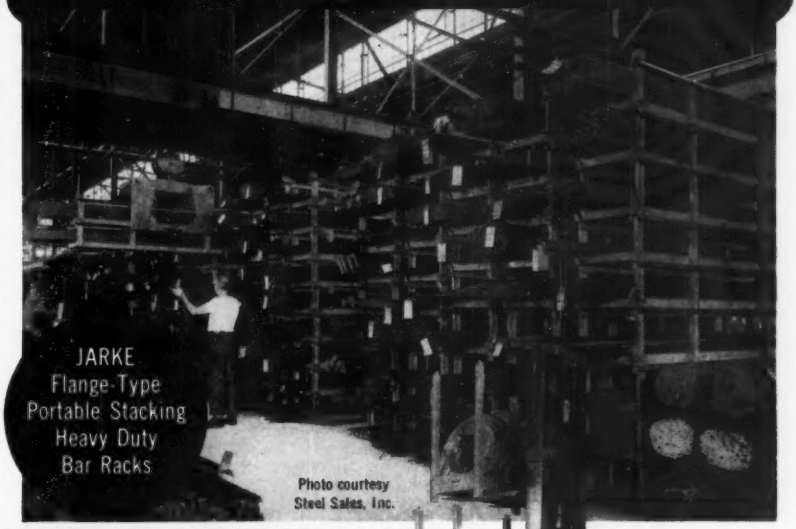
versatile, more attractive, and they're cheap.

The electrics can carry a 1,000-lb. payload of luggage, and a driver, and a passenger. For pulling trains of baggage to and from airplanes, they're equipped with special trailer hitches.

The airline says it also likes the

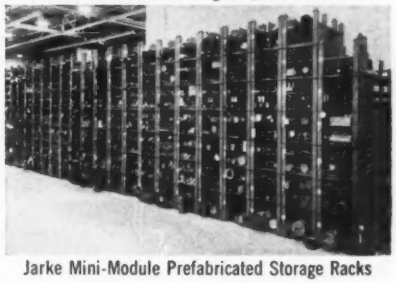
Continued on page 42

JARKE Modular Storage Systems *Pay Off in Cash!*



Jarke Portable Stacking Wire Coil Racks

Jarke Portable Stacking Strip Coil Racks



Jarke Mini-Module Prefabricated Storage Racks

Inefficient storage methods can be very expensive. You may be wasting valuable floor and air space. Now is the time to put a stop to such extravagance . . . install a modern Jarke Stock Storage System engineered to your specific requirements. Let a trained Jarke expert make a cost-free analysis of your present storage methods. Odds are . . . he will turn your storage losses into real cash profits. Write today.

Jarke can solve difficult storage problems quickly

JARKE MANUFACTURING COMPANY

6333 HOWARD STREET
CHICAGO 48, ILLINOIS

An Orderly Plant is a Profitable Plant

Circle **65** on Reader Service Card

Shepard Niles JOB-MATED Hoists

LOWER THE COST OF LIFTING YOUR LOADS

Shepard Niles Vapor-Proof Hoist

Each Shepard Niles **JOB-MATED** Hoist is supplied with the combination of components best suited to meet your exact on-the-job conditions. This care in our plant means reduced handling, production, and storage costs in yours . . . through increased efficiency, minimum maintenance costs and extra years of service with QUALITY equipment.

You can choose **JOB-MATED** Hoists in capacities from ¼-ton to 30 tons . . . with motor-driven or push-type trolleys . . . single or multiple speed controls (multiple speed provides from 5 to 17 control steps) . . . pushbutton, pendant rope, or lever controllers . . . floor or cab-operation . . . vapor-proof or explosion-proof construction.

Each **JOB-MATED** Hoist is tested under full load before shipment, and is guaranteed to perform as rated without overheating of motors, controllers, and brakes. You'll find it will pay to look into Shepard Niles **JOB-MATED** QUALITY Hoists for your load-lifting and moving operations. Write for descriptive bulletin and request a representative to call.

Member of Hoist Manufacturers Association, Inc.

America's Most Complete Line of Cranes and Hoists

SHEPARD NILES
CRANE AND HOIST CORPORATION

2764 Schuyler Ave., Montour Falls, N.Y.

Circle **103** on Reader Service Card

COST CUTTING IDEAS

quiet operation of the carriers. The noiseless motors do not interfere with ground instructions to pilots.

The vehicles used by Western Air Lines measure 47½" wide, by 104½" long, by 46½" high. They have a turning radius of 6', 10", go forward at speeds up to 15 mph, reverse at 6 mph. They run 50 miles before they have to be plugged into the battery recharger. —*Cushman Motors.*

Circle **258** on Reader Service Card

Hoppers Simplify Sand and Cement Handling

The Consolidated Water Power & Paper Co., Wisconsin Rapids, Wis. dropped several steps in handling sand, gravel, and cement on construction projects. Consolidated uses self-dumping hoppers.

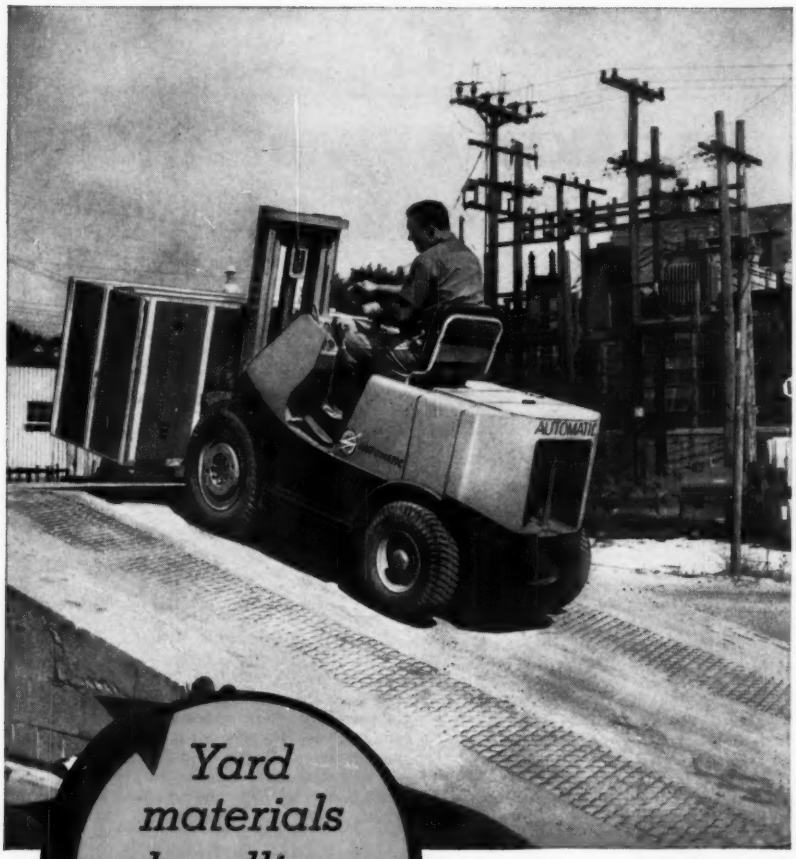
On large projects, Consolidated buys ready-mixed concrete. The trucks chute it directly into hoppers. Then fork trucks take the hoppers to the job. Hoppers of ½- and ¾-cu. yd. capacity have proven faster and easier to use than wheelbarrows and concrete buggies.

On smaller jobs, masons mix their own concrete. Consolidated

loads sand into hoppers with a front end loader (see illustration) in the mill yard. An outdoor fork truck then carries the hoppers to the mill's loading dock where they're transferred to an indoor fork truck and delivered to the site.

To dump the hoppers, the fork truck operator releases the lock handle on the rear of the hopper. It rocks forward, dumps the load. The hopper automatically returns upright and locks, ready to be returned for further loading.—*Roura Iron Works, Inc.*

Circle **259** on Reader Service Card



Yard materials handling your problem?

AUTOMATIC® *gas-powered trucks cut fuel costs as much as 30%*

Yard handling means long distances, semi-finished areas, ramps and all-weather operation. It can mean high fuel consumption, more maintenance. But it doesn't have to—not if you use the truck that's designed to cut fuel and maintenance costs. That's AUTOMATIC's pneumatic-tired Model GLFP, the gas-powered truck that saves up to 30% in fuel compared to similar trucks doing the same jobs. It saves on maintenance, too! Power steering is standard equipment. You get all this at the same price you would pay for less rugged equipment. Model GLFP is available in capacities of 3,000 thru 8,000 lbs. with pneumatic tires. Get all the facts. Mail coupon.

Precise inching control permits Model GLFP truck to accurately tier concrete block, bricks, lumber, and tile in minimum time.

Semi-finished area is no problem for the Model GLFP in this drum handling application. There's plenty of underclearance for outdoor work. Truck easily bridges the top of steep ramps.

Power steering as standard equipment makes the Model GLFP exceptionally maneuverable and easy to drive. Result: faster handling, lower costs.

AUTOMATIC TRANSPORTATION COMPANY
Division of The Yale & Towne Manufacturing Company
141 West 87th Street, Dept. C1, Chicago 20, Ill.

FIRST IN IMAGINATION
FIRST WITH REALITY

SEND FOR DESCRIPTIVE LITERATURE

New bulletin "Facts and Factors about Gas-powered Lift Trucks" and "AUTOMATIC Industrial Trucks Selector Guide" free on request.

Name_____

Company_____

Street_____

City_____ Zone____ State_____

Circle 6 on Reader Service Card

RAPISTAN Ideas HANDLING

RAPISTAN TAKES A "WIDE-ANGLE" YOUR TOTAL ACCUMULATION AND

Have you counted your warehouses lately? Not to inventory the items in them — but to identify them, wherever they may be found in your operations?

Counting warehouses is not as far-fetched as it may sound. Although most businesses readily recognize two or three warehousing areas — shipping, receiving and central storage areas, for example — this is only part of the story.

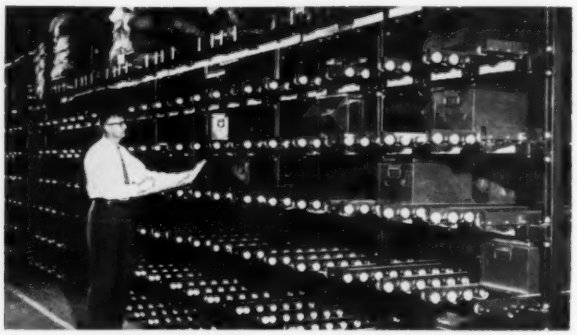
When the flow of materials through any plant is analyzed, build-ups of work are frequently found before and after many operations. Regardless of the volume of material involved, these constitute real warehousing problems that may be costing you more than you realize.

By streamlining and simplifying the operation of your major and "hidden" warehouses, you can gain better utilization of space and control of inventory, assure first-in-first-out use of materials, cut down on spoilage and damage costs, and cut out much lost time and wasted motion.

This method of parts storage is typical of many manufacturing plants. All the parts needed at this part of the line are here, if the workers can find them. Rapistan warehousing principles treat such build-ups of material as true warehousing problems.

(Below) Optimum quantities of all parts needed at the same assembly station now are stored in Live Storage Flow Racks, loaded from service aisles. No time is lost in walking and searching — no interruptions for delivery of supplies.

This central storage area (above) is typical of many industrial plants. Stacked bins and boxes defy efficient handling. Wide aisles required by lift trucks waste additional floor space. Rapistan warehousing principles (below) reduced the floor space of this central storage area by 4,500 sq. ft. and added 10,000 more sq. ft. of storage capacity. Parts now stored in Rapistan Flow Rack are instantly accessible; inventory control is simplified, and FIFO use of stock is automatically enforced. Space is used to the full cube capacity.



CONSIDER TIME ELEMENT, TOO

Goods need not remain at rest for days or weeks to constitute a true warehousing situation. In modern concepts of efficient handling, where accumulation must be closely coordinated with other functions of the flow system, warehousing problems can result from materials being stopped or stored for as little as a few minutes. In fact, since such short-term stop-overs usually involve frequent rehandling, rapid turnover can be more costly than long-term storage would be.

MAKE MATERIALS "CONVEYABLE"

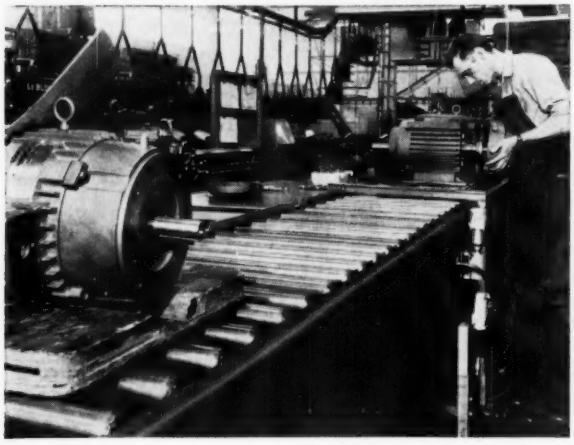
The "condition" of the materials to be handled also has a relationship to your accumulation problems. In many situations, the key to gaining the advan-

VIEW TO SOLVE MOVEMENT PROBLEMS

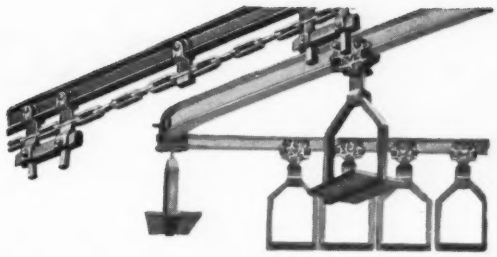
tages of live storage for "problem" parts is to place them in a "conveyable" condition.

If you've rejected the application of advanced warehousing principles to the storage of certain items because of their size, shape, weight or handling requirements, you may be denying yourself cost savings that could be yours. Simple, low-cost standardized containers may allow you to store such materials on wheels or rollers, where they belong, for reduced handling and easy accessibility. Low-cost pallets, tote boxes, and trays or simple carriers for overhead trolley conveyor, often can serve as suitable containers for even the most unwieldy objects.

Your Rapistan engineer is trained to look beyond the obvious, recognize accumulation problems wherever or whenever they exist. He will recommend practical solutions that promise profits in lower-cost, more efficient handling methods. If you'd like to see some examples of how Rapistan's modern warehousing techniques and coordinated handling systems have paid off for others — manufacturers, wholesalers, retailers and service industries—send for this "Handbook of Materials Handling Ideas." Circle No. 10 on the Reader Service Card.



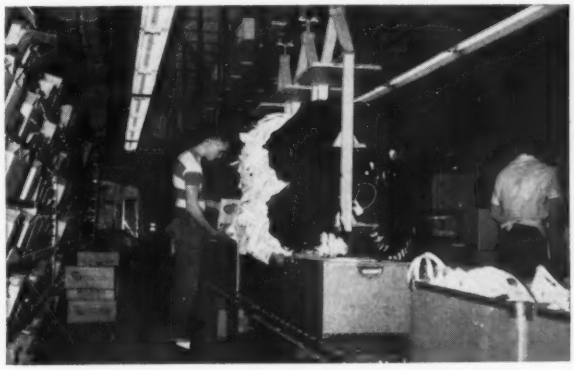
Heavy generator parts in this plant are "warehoused" for short times at several points in the progressive assembly operations. Low-cost wooden pallets serve as standardized containers for these otherwise "nonconveyable" objects.



POWER and FREE is a complete and versatile overhead flow system

Rapistan Power-and-Free conveyor systems give you full-time control of materials in motion on overhead conveyor. You can automatically direct the flow of goods or parts to work stations, accumulation points, into temporary or long-term storage — and recall loads selectively whenever and whereever needed for most efficient materials flow.

Overhead Power-and-Free conveyor can be integrated into an existing or new floor-mounted conveyor system, as in this garment manufacturing plant. This is a transfer area, where materials are unloaded from the overhead "free" line to containers on the floor conveyor.



Even when different time cycles are involved for individual processing operations, Rapistan Power-and-Free lets you coordinate and control the entire flow pattern for maximum efficiency. Many manual handling operations can be eliminated or made more efficient, by a simple, trouble-free Rapistan Power-and-Free overhead conveyor system.

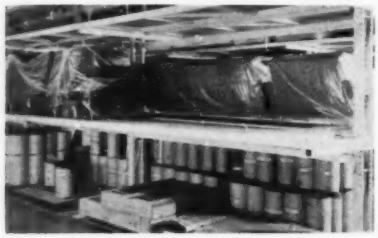
For information on Rapistan Power-and-Free Conveyor in industrial processing and warehousing applications, write for this new illustrated brochure.
Circle No. 11 on the Reader Service Card.

Rapistan®
CONVEYING EQUIPMENT
The RAPIDS-STANDARD COMPANY, Inc.
502 Rapistan Building, Grand Rapids 2, Michigan

PRODUCT NEWS

No Supports from End to End

Cantilever Speedrack eliminates vertical supports at front and sides of storage decks. Long-material stores



easily, is readily accessible. Rack may be free-standing, unsupported by ceiling or wall. Result: Lower handling costs, increased storage capacity. Rack members self-locking at 2-inch intervals, no bolts or tools needed. Wide range of deck depths.

Speedrack, Inc.

Circle **301** on Reader Service Card

Thrifty Handling

Hook-N-Go, a jack and skid combination, provides storage plus instant mobility at reasonable cost, maker claims. Jack services many skids, has formed steel pintle mount and heavy-duty pipe handle. Decks of seasoned

1¼-in. hardwood, armored at front with steel angle. Standard platform sizes, roller-bearing wheels.

Nutting Truck and Caster Co.

Circle **302** on Reader Service Card

Outdoor Storage Cover

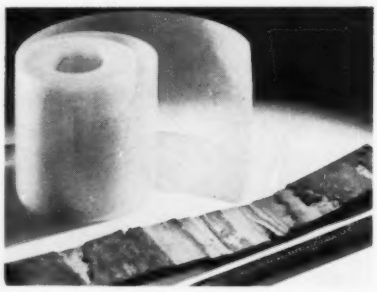
Durable plastic-laminated burlap material, tradename—Burlene. Resists water, tears, punctures, dust, and dirt. Said not to develop leaks from flexing or normal abrasion, takes high or low temps, stays flexible below zero. Won't trap condensation. No stitching. Seams and hems rubberized and heat-fused. Comes flat or pre-formed in wide range of sizes and constructions. Use it outdoors to store heavy machines, dies, lumber, firebrick, etc. Samples available on request.

Bemis Bro. Bag Company

Circle **303** on Reader Service Card

Nylon Core Aids Belt Life

Belt for extremely rugged use has core layer of heavy nylon sheet that has high impact resistance. The sheet



is oriented for improved tensile strength, minimum stretch. There's less tendency to elongate, or impact widen. Longer life, lower maintenance, says maker. Flex strength is good, belt hugs pulleys with minimum slip. Nylon won't act as wick, won't absorb chemicals destructive to belt core.

Spencer Chemical Co.

Circle **304** on Reader Service Card

For Faster Sealing

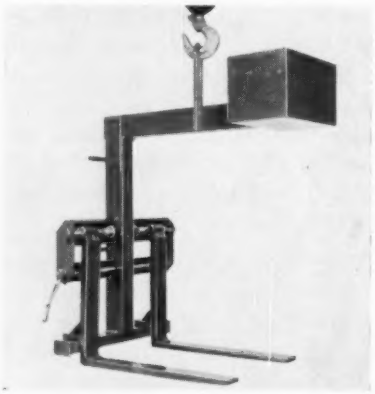
Bostik Model B adhesive applicator has push-button control on brush barrel, feeds solvent- and water-based adhesives through a flexible hose directly into brush. Saves time, adhesive, reduces fatigue, says maker. Tanks for 2 or 5 gals. have 3 outlets, operate from 20 psi air. Six-ft. hose.

B. B. Chemical Company

Circle **305** on Reader Service Card

Overhead Pallet Lifters

Lift forks for overhead cranes safely handle palletized loads overhead. Posi-



tion forks precisely under load, there's no damage to load or pallet from cable or chain sling. Adjustable and fixed type forks. Forged construction gives thin fork section. Capacities from 4,000 lb.

Cullen-Friestedt Co.

Circle **306** on Reader Service Card

Lifts & Totes Flat-Bottom Crates

Crate Mate hand truck easily picks up from the floor flush-bottom crates and moves them. Handle on truck tilts crate up, operator scoots truck

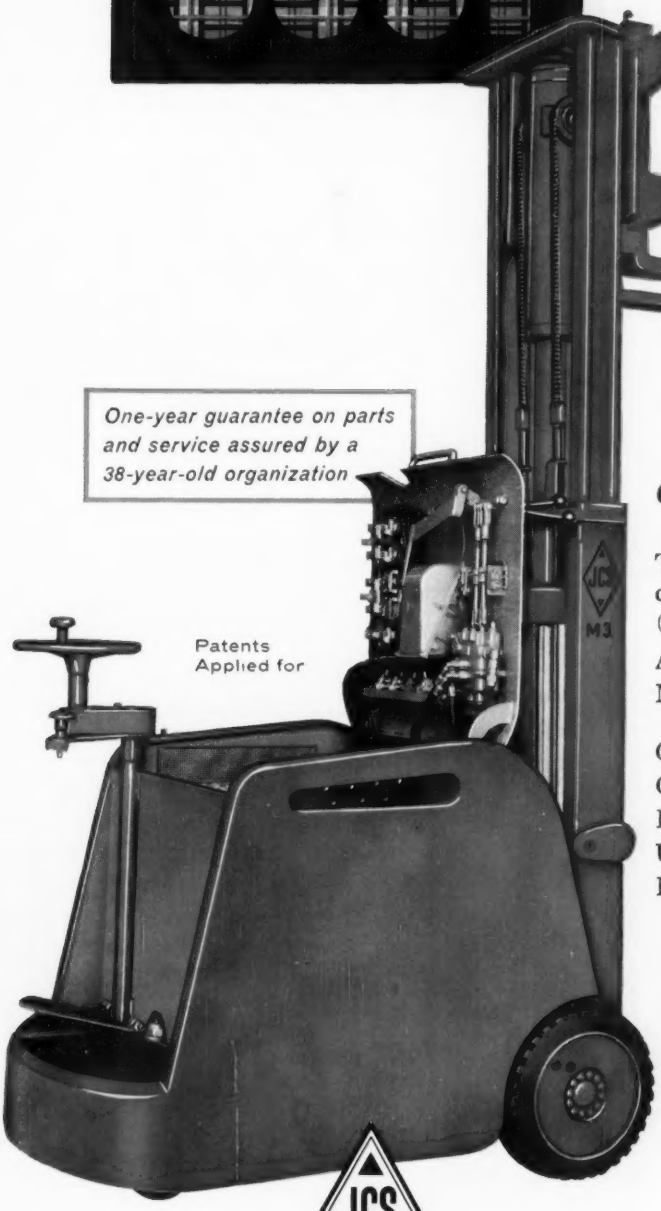
under crate with his foot. Rollers on truck upper surface enable crate to slide easily onto the truck. A sharp tug backward unloads crate from truck.

Continued on page 48

the SCOT a Complete Concept

• NEW
• PROVEN

an electric lift truck which skilfully blends the advantages of both narrow aisle and counterbalanced designs . . .



One-year guarantee on parts and service assured by a 38-year-old organization

Patents Applied for

Totally unrestricted by ordinary design and construction, the SCOT gives you all these (and other) tremendous advantages:

A 52″ turning radius.

Most speed and power in its class ▪ 20% gradeability.

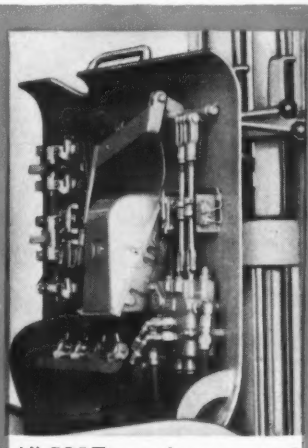
Greatest visibility ▪ unsurpassed safety.

Operator alertness ▪ less fatigue ▪ fewer accidents.

Fewest moving parts ▪ functional simplicity.

Unequalled accessibility.

Finest trade name components ▪ unitized construction ▪ positive traction ▪ virtual indestructibility ▪ ample battery capacity.



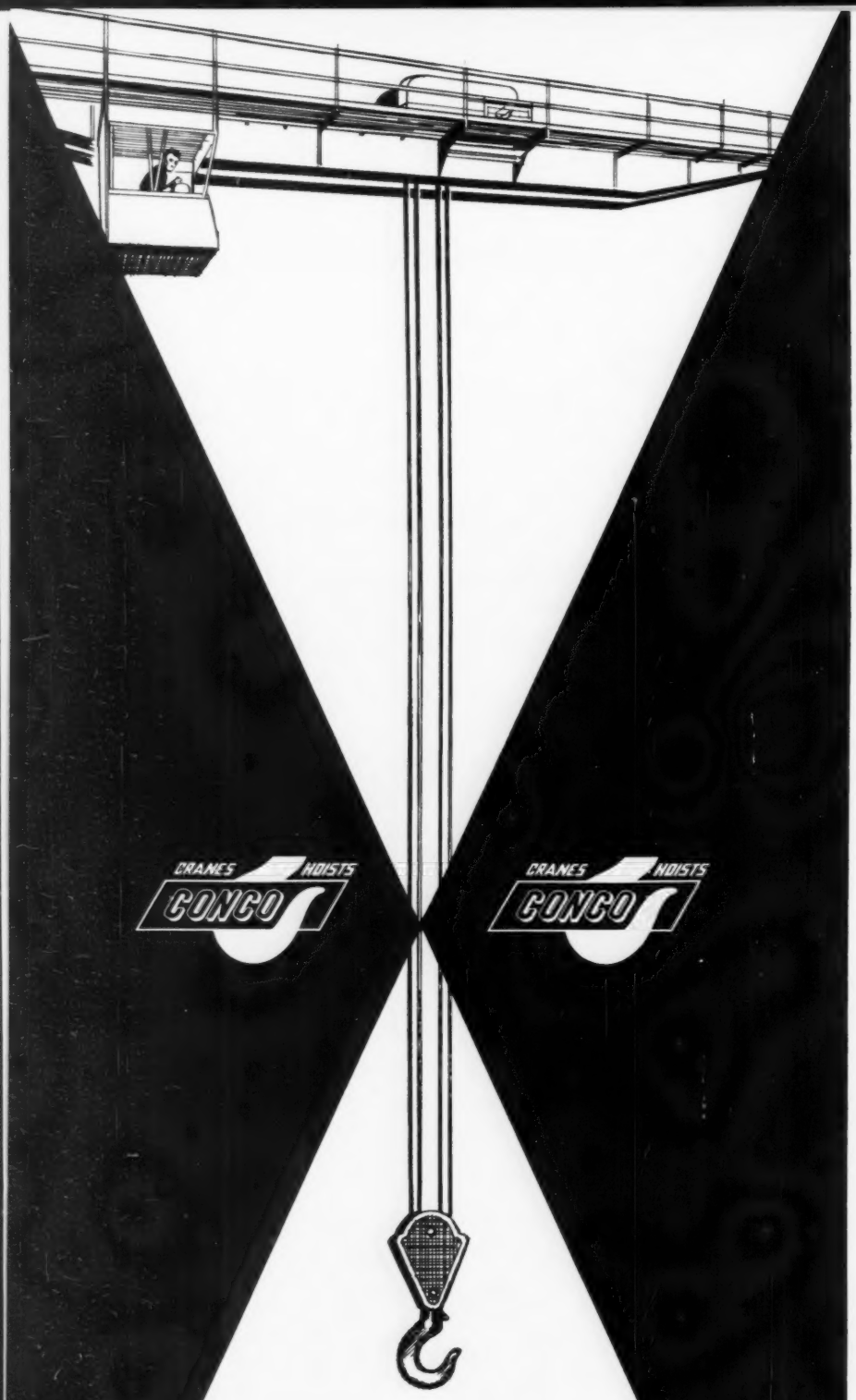
All SCOT controls are mounted on the underside of the top cover for instant accessibility.

JCS The Mark of Quality

Pay once for your truck and be SCOT-free of maintenance

JAMES CAMPBELL SMITH
incorporated • WILLOUGHBY, OHIO

Circle **108** on Reader Service Card



Custom-Engineered
Overhead Electric Traveling
Cranes in Capacities to
150 Tons. Write for Bulletin 5000B.

Material Handling Division
CONCO ENGINEERING WORKS, INC.
Mendota, Illinois

AFFILIATES: Spartan Tool Division—Powered Sewer Cleaning Equipment • Field Control Division—Barometric Draft Controls • Conco Building Products, Inc.—Brick, Tile, Stone

Circle **30** on Reader Service Card

PRODUCT NEWS

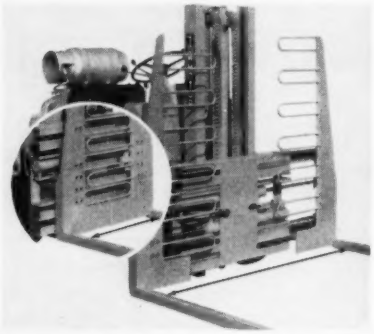
For crates with 0 to 2-inch ground clearance, and up to 6 ft. length.

Stokvis-Multiton Corp.

Circle **307** on Reader Service Card

Forks Grip, Lift

Fork-and-clamp attachment works with paper pallets. Side-shifting forks lift and also clamp tight on bottom



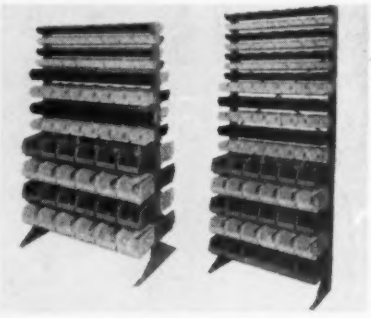
row of cartons. General Purpose Clamp has 45-in. forks that expand laterally from 30 to 69 in. They'll handle carton loads from 34 to 46 in. stacked in T-formation on paper pallets. Five-foot backrest handles high loads.

Towmotor Corporation

Circle **308** on Reader Service Card

Racks for Boxes

Makers of Plastiboxes offer storage racks for them. Available as free-



standing double or single wall units. Handle up to 224 boxes in combinations. Boxes readily removed from racks.

G. B. Lewis Co.

Circle **309** on Reader Service Card

All-Transistor Pocket Transmitter

Completely self-contained, eleven-transistor Handie-Talkie weighs 14½ oz. with batteries, microphone, and

Continued on page 51

Another first from Standard Conveyor

New continuous vertical conveyor revolutionizes floor-to-floor movement

Escaveyor self-loads, self-unloads, lifts products straight up or down without tipping or jarring. Provides smooth up, down, or reversible service.*

How Escaveyor speeds production. Here is the answer to your big need for a fast, continuous flow of commodities from floor to floor. Escaveyor moves commodities at a steady rate of 8 to 10 loads per minute.

How Escaveyor saves space. Escaveyor lifts packaged or unit commodities rapidly from floor to floor with the continuity of a belt conveyor. Yet your product always rides level. And look at the huge saving in space! It takes even less floor space than a conventional monostrand or straight-lift conveyor! Escaveyor's size is tailored to fit your package.

How Escaveyor costs less. Escaveyor actually costs less to purchase and install than practically any other type of lift. It requires less manpower because no manual loading or unloading is required. You also save many square feet of valuable floor space.

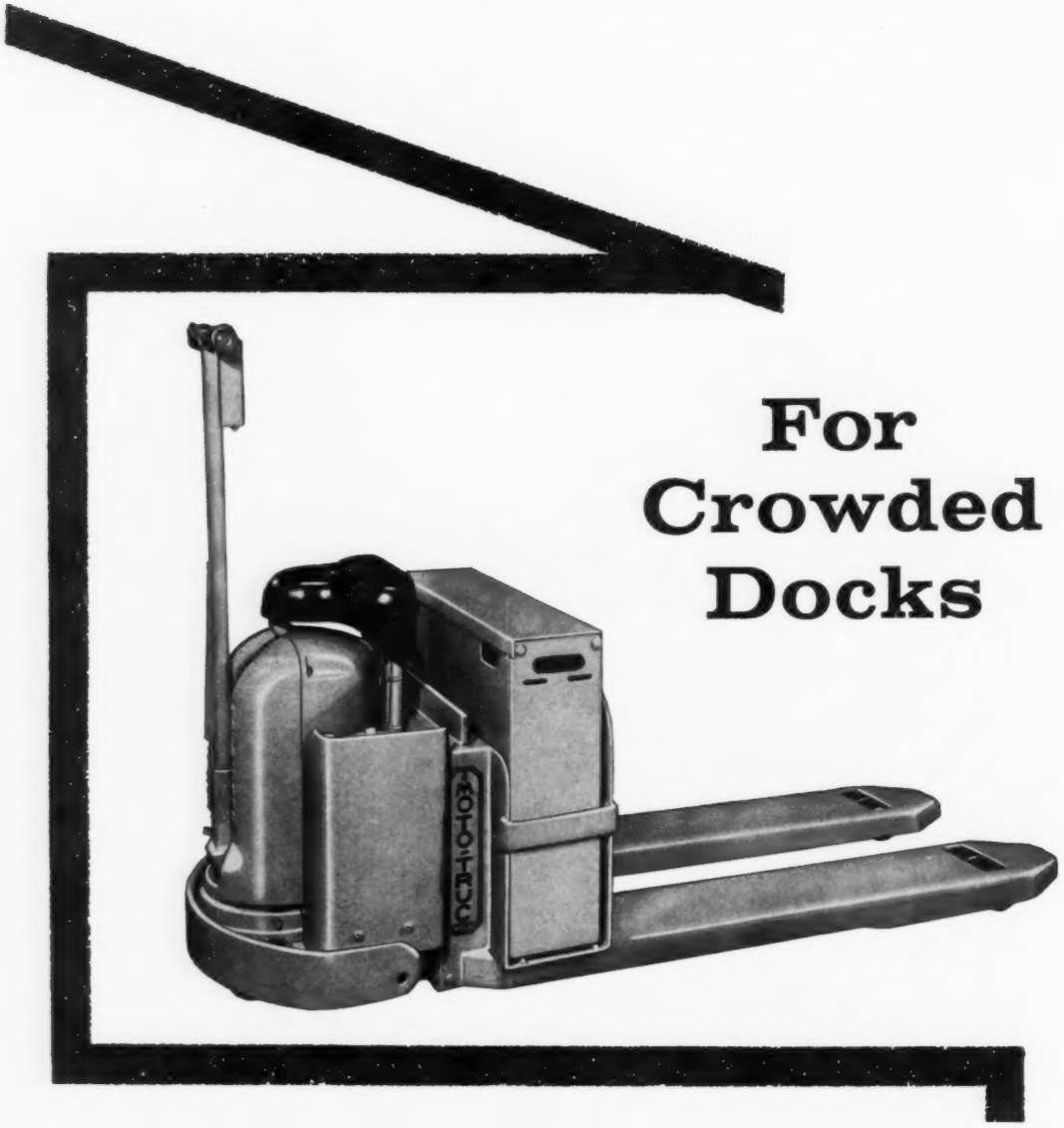
Free brochure. Send for free Escaveyor brochure! It tells how Escaveyor works, and how it can solve vertical material handling problems for *you!* Get your copy from Standard Conveyor Company, Dept. 302-C, Second St., North St. Paul 9, Minnesota, or from your nearby Standard Conveyor sales representative.

*patent pending

Standard Conveyor

Sales and Service in over 40 Cities
Consult your Yellow Pages

Circle **107** on Reader Service Card



For Crowded Docks

Use MOTO-TRUCS

Clean, compact design and turn-on-a-dime maneuverability gives MOTO-TRUC more elbow room in congested areas. And MOTO-TRUC's rugged dependability means extra capacity for heavy loads, lower maintenance costs, more operational flexibility. Get MOTO-TRUC for top performance on crowded docks . . . or anywhere.

Largest Exclusive Manufacturer of Walkie Trucks

The MOTO-TRUC Company
1955 East 59th Street, Cleveland, Ohio

Circle **79** on Reader Service Card

PRODUCT NEWS

antenna. Delivers 500 milliwatts RF output in VHF communication bands.

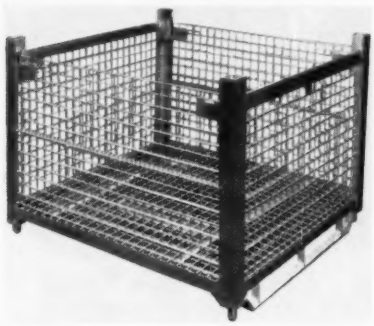
Power output stays steady for life of batteries. Matching receiver for 2-way talking.

Motorola Inc.

Circle **310** on Reader Service Card

Floor Space Savers

Model 600 Wiretainer—combined container and store rack, ships by rail or truck, stacks to save floor space. Self-cleaning, reduces fire hazard. Vis-



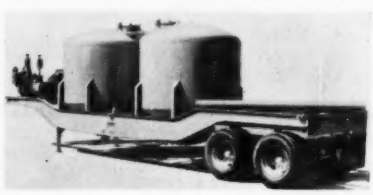
ible inventory, 6,000-lb. capacity. Made of heavy steel wire welded at all joints in 2 x 2-in. mesh. Drop sides or fixed. Fabricated steel posts, frame, and runners. Dipped aluminum finish.

Springport Steel Products Co.

Circle **311** on Reader Service Card

Unloads Bulk Quickly

Twin-tank Jet-25 pneumatic trailer is said to unload up to 4,000 lb. per



minute. It handles powdered and granular materials, uses high pressure with low air volume. Material flows through unloading pipe in high-density state. Vessels easily cleaned between products.

The Heil Co.

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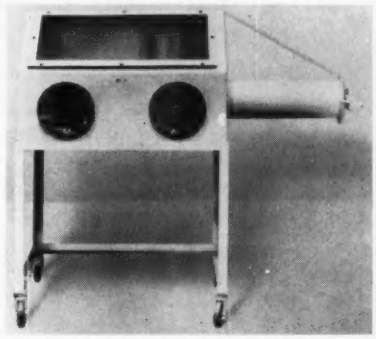
Dust-tight Work Box

Model B-10 is a dust-tight, stainless steel glove box. Chamber retains dust-free or dry air atmosphere, confines toxic or radio active materials. Work space 34″ x 22″ deep; max. height, 22″. Sloping safety-plate glass window, 10″ x 28″ for clear visibility. Two 8″ glove ports below window with cover plates. Entrance ports on both sides, 8″ diam., flanged to join



2 or more boxes together. Air intake and exhaust ports on top. Many accessories include airlocks.

Delta Design, Inc.

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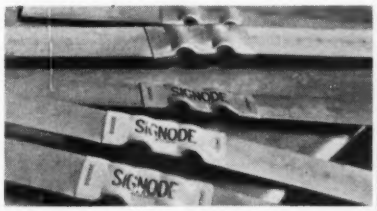
Better Seal for Strapping

You use lighter gauge strap and less sealing effort with Microgrip seals for painted or waxed steel-strapping. Seals are coated inside with special high friction mastic compound, combine high joint strength with high impact resistance. Compound bites



through slippery coatings when seal is crimped, gives strong frictional bond between metal surfaces. No notches weaken strap.

Signode Steel Strapping Co.

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For more PRODUCT NEWS turn to page 98

Low lift pallet truck for horizontal handling of loads on pallets. 4,000 and 6,000 pounds capacity.
Counterbalanced Fork truck for high stacking loads on pallets. 1,000 to 3,000 pounds capacity —up to 130″ lift.
MOTO-TRUC
Walkie Trucks
Outrigger pallet truck for stacking from aisles as narrow as 6 feet. Lift to 130″ in capacity— to 4,000 pounds.
Tractors for all towing jobs with draw-bar pull to 700 pounds. Models to handle trailers, live or semi-live skids.
Write for free Moto-Truc "walkie" catalog . . . ask for Bulletin No. 56W.
World's Largest Manufacturer of "Walkie" Trucks
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PAYLOADER®
for your
SMALL JOBS

Model HA easily handles 2,000-lb. bucket loads in and out of narrow box car doors. Operates on gas, diesel or LPG power. Has front wheel drive, rear wheel steer; 40° bucket tip-back at ground level.

Model H-25 with power-steering and 6-ft. turning radius is ideal for fast indoor and outdoor handling. Features 2,500-lb. operating capacity, full power-shift transmission, 44-hp. gas engine. Diesel optional.

Model HAH with 3,000-lb. operating capacity, 2-wheel (front) drive and high lift is just right for charging bins. Rear wheel power-steering and full reversing transmission aids maneuverability.

PAYLOADER®
for your
MEDIUM JOBS

Model H-30 "PAYLOADER" is a compact 4-wheel drive unit with 3,000-lb. capacity (1-cu. yd. bucket). Has 4-wheel drive, 4-wheel brakes, power-shift transmission, 77½-hp. gas engine. Diesel optional.

Model H-50 works fast indoors and outdoors. Carries 5000-lb. load smoothly. Power-shift transmission with finger-tip shifting, power-steering and large tires let operator maintain steady, full production pace.

Model H-30 Fork Lift tractor handles 6,000-lbs. to 14-ft. max. stacking height; to 21½-ft. at reduced capacity. Has 4-wheel drive, power-steering, power-shift transmission and 4-wheel hydraulic brakes.

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PAYLOADER®
for your
LARGE JOBS

Model H-70 has 7,000-lb. operating capacity. This one is fitted with RR. coupler and bumper plate for car switching. Moves 4 or 5 loaded cars at a time with powerful 4-wheel drive.

Model H-90 combines flexibility with big capacity (9,000-lbs.). Indoors it picks up sand and scrap from foundry floor; outdoors same machine loads out 1½-ton slag skulls, levels waste dump, does crane work.

Model H-120 easily handles 12,000-lb. loads, and has perfect balance and visibility. 4-wheel drive, 4-wheel air brakes, high dump and long reach are some of its outstanding features.

the most complete line of tractor-shovels for
INDUSTRIAL USE

In Handling Materials, nothing beats the efficiency and economy you get when the equipment used matches the job to be done. Hough alone can provide the widest selection of rubber-tired tractor-shovels in sizes and types to fit all kinds of jobs and materials — four compact, maneuverable 2-wheel drives *plus* five large-capacity, heavy-duty loaders with 4-wheel drive traction.

Any PAYLOADER is highly adaptable: It goes to work for you without special or expensive installations, has no fixed path to follow, no fixed operating limit. It loads itself anywhere, travels any path, delivers its payload any place, indoors or out, with speed and safety.

2-Wheel Drive units (up to 3,000-lb. operating cap.) are particularly suited for close-quarter operation. All have torque converter drives and the H-25 has a 2-speed forward *and* reverse speed power-shift transmission. Power-steering and torque-proportioning differentials are standard on all except the HA model.

All 4-Wheel Drive Models are heavy-duty loaders for large-volume bulk handling from 1½ to 6 tons at a time. They are equipped with power-shift transmission, torque-proportioning differentials, power brakes and power-steering for easy operation. They work fast and efficiently on either paved or unpaved surfaces.

For Maximum Versatility, Hough again provides the widest choice of attachments that multiply PAYLOADER usefulness: patented 4-in-1 bucket, fork lift, crane hook, sweepers, scrap grapple, side boom, snow plows. Get the full story on the "PAYLOADER system" for flexibility, economical material handling from your nearby Hough Distributor now, or return the coupon.

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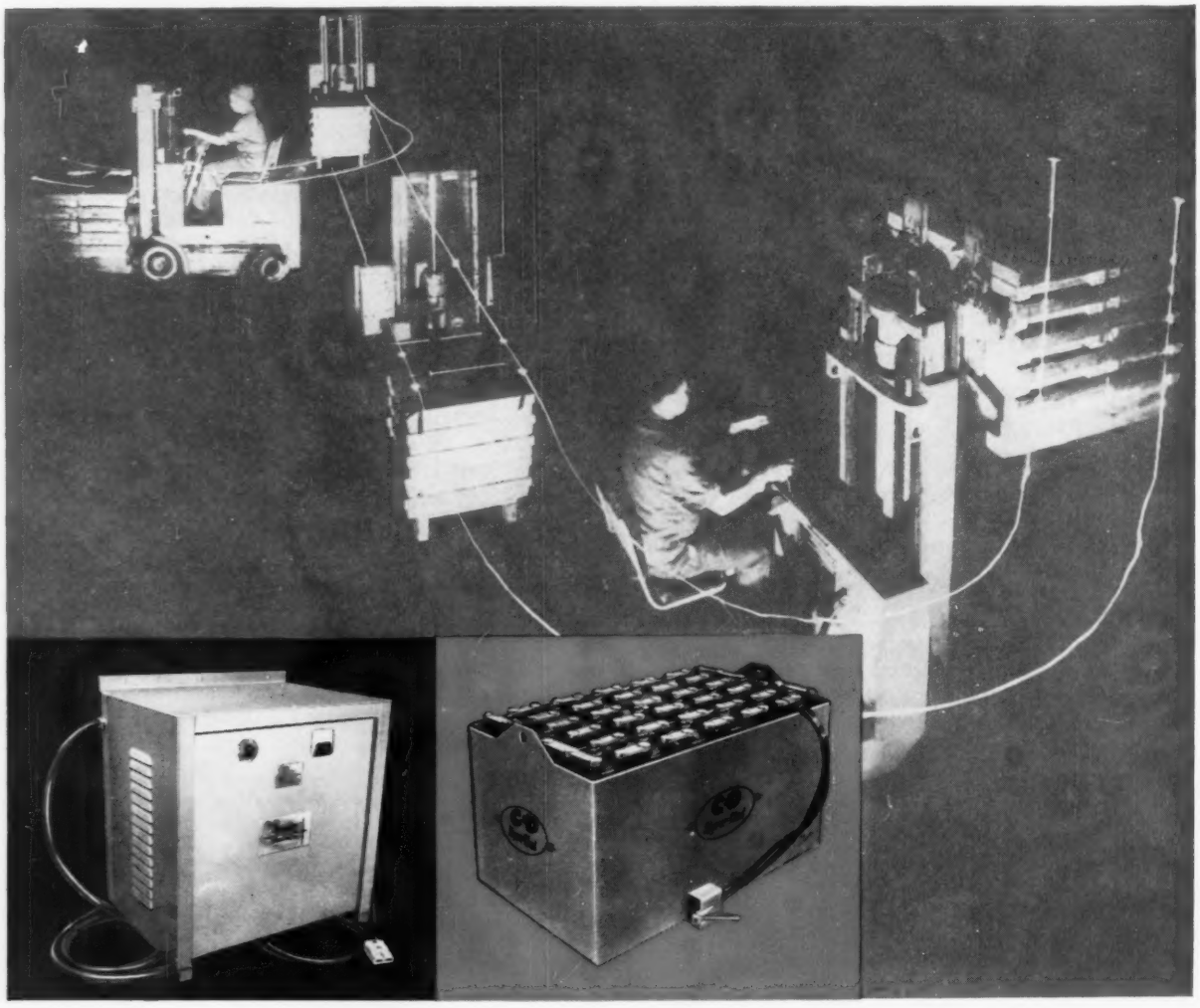
reliability

Reliable electric trucks used in your materials handling operation will prove an even greater asset if you use C & D's power team. C & D Slyver-Clad batteries plus C & D AutoReg chargers give you a truck power source unmatched for life, economy and simplicity of operation. Extra thick plates in C & D Slyver-Clad batteries provide extra life. Five Fold Slyver-Clad insulation and retention virtually eliminates life-shortening sediment build-up. Hi-Impac cell covers and containers, exclusive in C & D Slyver-Clad batteries, resist breakage and drastically reduce the need for battery repairs. C & D AutoReg chargers with Slyver-Clad batteries complete the perfect power team. AutoRegs are highly efficient, simple to operate and have no relays to adjust. Operation does not require trained personnel. A unique charging circuit, incorporating a hermetically sealed silicon rectifier, automatically supplies the required charging current and increases battery life expectancy. Because the rectifier doesn't age, aging taps and the need for adjustments are eliminated. AutoReg chargers are ideal for any type of plant layout. They may be wall, balcony or floor mounted. Smaller models can be truck mounted. All AutoRegs will improve the performance of any make battery. Regardless of the nature of your truck fleet—hand, rider, or combination of both—it will pay you to combine Slyver-Clad batteries with AutoReg chargers. Write for AutoReg and Slyver-Clad bulletins.

For ultimate reliability—electric trucks powered with C & D *Slyver-Clad*® batteries—charged by *AutoReg*®!



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Material Handling Engineering

MARCH 1961

Exposing the phony consultant

By **DICK DIETZ**, *associate editor*

HE'LL LOOK LIKE A RESPECTABLE, distinguished businessman. He'll be charming and glib, sound impressive. He will neither look nor act like the man on our cover.

Like the man on our cover, however, he'll be playing the shell game. It's a game that you can only lose. At best, your material handling will be no worse if you buy his advice. At worst, he'll cost you money to correct his errors. And your faith in consultants will diminish proportionately.

I interviewed seven bona fide consultants from the industrial areas of Buffalo, Detroit, Cleveland and Columbus. My list included independent material handling consultants, those from large and small firms, management consultants, and a captive (works for one manufacturer) consultant.

They agreed substantially on some things about the phony material handling consultant:

- **What he is**—a consultant who bites off more than he can chew, gives advice where he is not competent. He may be thoroughly able in another area. But if he takes a job he's not absolutely fitted for, then he's a phony.

- **What he isn't**—a criminal, a confidence man. Nor is he intentionally dishonest. But, as someone once said, the road to Hell is paved with good intentions.

For a Closer Look

Good professional consultants, like those I talked to, hesitate to discuss the phony. They'd rather he didn't exist—at least so far as the outside world is

concerned. But inside the clan—watch out! Legitimate consultants spare no scorn for the phony. They know he weakens the field, reflects on them.

Watch these phonies at work:

Case I—A consultant sells a study on processing and office procedure. When he arrives at warehousing the processed goods, does he admit he knows little about it? No, he dives right in. And the client is fortunate if he gets a workable warehouse, although he's paying for a good one.

Case II—A consultant lays out a plant, installs a system, and it works. Then he gets another, but similar, job. He takes the blueprints from the first, makes a few changes, and sells the idea to the second client. He fails to consider differences between the two jobs. Good consultants must spend a great deal of time learning individual problems of each client.

Case III—A firm of engineers takes on a job of receiving and preliminary storage. The man who accepts the job knows his firm isn't up on the latest techniques; it has been concentrating in recent years on in-process handling. So he writes to a firm of experts on receiving, seeking free details, such as dock layout, preliminary storage, system speeds, and cost formulas. The experts politely decline.

How'd the Phony Get That Way?

It takes someone to make a bargain with a phony. We encourage the phony by buying price. Sadly, it's often true that the engineering service you get for the fewest dollars becomes the most expensive engineering.

Then too, we encourage the phony by failing to investigate him thoroughly. This means effort on our part. Most of us wouldn't buy a hot mink from a fence in an alley. So why buy a glittering proposal from a consultant without investigating him?

When hiring a consultant, beware of conflict of interest, lavish entertainment aimed at influencing you, and nepotism (taking advantage of blood relationship rather than ability). Our inability to resist these pressures enables the phony to survive.

How to Pick a Good Consultant

It's not easy. It will take plenty of checking and not a few conferences before you make an intelligent decision. The checklist on page 57 will help you.

Consultants are highly independent individualists, but my seven informants agreed on many characteristics of a capable consultant. Now and then they disagreed. I learned, as you will, not to expect unanimity among consultants.

Finding Your Man

Heavy advertising is out. A legitimate consultant will do little more than list himself in some recognized society roster, such as the Association of Consulting Management Engineers Inc. A consultant qualifies for a listing by conforming to the group's requirements. This protects you and the field of consulting.

Ask your local societies (AMHS and SPHE, for example) and individual members for leads on consultants. Ask companies in your area about consultants they have employed.

Many legitimate consultants will call themselves to your attention. They may write you or send literature. Some superethical consultants will do this only at your request. Others, just as ethical, see nothing wrong in a carefully worded letter suggesting they're available to improve your business.

Some Things to Find Out

Make certain your consultant is a registered engineer or has one on his staff. Many States have strict laws which help weed out the technically incompetent. For example, some States require a bachelor's degree, five years of working experience or the equivalent, and passing a two-day written examination.

But your aim is not to discover a man of proved technical engineering competence but rather a man who knows what you need to help you.

Therefore, get background information on your consultant and possibly on staff members he will assign to your project. You're concerned with the breadth of their experience. But consultants are far from unanimous on this point. One feels you should choose a consultant with direct experience in your manufacturing field. Another calls this experience overrated. He says a good man can do a top job regardless of your product so long as he is proficient in general material handling techniques and has kept up with new developments.

Don't hesitate to ask for references to previous jobs and clients. Have no compunctions about calling them. Usually you'll get an honest opinion of the consultant's ability. You may be invited to a plant to see the system in action.

Your consultant may be a proficient engineer. But he needs other qualities to be useful. He must be practical. He must have a thorough knowledge of company finances. For example, consultants may have to deal with:

- Cost accounting.
- Depreciation of plant equipment.
- Justification for change based on the client's cost savings or need for improved quality.

Another important consulting attribute is personality. He needs a deskside manner, just as a doctor needs a bedside manner. A good consultant must deal smoothly with top management. He must obtain information that management might prefer to withhold or fails to recognize as pertinent. The consultant also must be sensitive to organizational responsibility and to working relationships in the plant.

One consultant figuratively tries to become a part of the company. This way he gets top management on his side. He says his proposals come to life only when management concurs with his thoughts and applications.

The Equipment Supplier

Can a consultant also represent lines of equipment? No, say some. You can't carry water on both shoulders. Representing a manufacturer while trying to act as a consultant destroys objectivity.

TO TELL THE PHONY FROM THE GENUINE

... Find out if he's affiliated with respected consultant and engineering societies.

... Inquire about his reputation in the industrial community.

... Talk to two or three consultants before settling on one.

... Ask him for background information.

... Make sure he's a registered engineer or has one on his staff.

... Ask for examples of his work and former clients.

... Get their opinions of his qualifications.

... Be careful if he bases his fee on anything but accepted methods.

... Watch out if he's a salesman for a consulting firm rather than one of the consultants.

... Be watchful of the type of contract he offers.

... Determine if he's willing to seek help when confronted with a problem in a field other than his own.

Yes, say others. It depends on how the consultant balances the water on his shoulders. One consultant says he never selects equipment for jobs on which he's the adviser. He says he may bid on the job, but he also calls in other suppliers and then gives the client the choice.

About That Fee

It's a good tipoff on the phony. How consultants charge varies greatly but they agree on certain taboos.

Beware of the man who bases his fee on a percentage of savings due to his work. This arrangement is considered unfair, even unethical. Most consultants compare it to a surgeon asking for half the worldly goods of a patient whose life he saved.

Beware of the man who offers a free analysis. This does not refer to a free preliminary survey. Consultants must spend some time going over the problem, perhaps several days, to decide if they can help. But suspect the consultant who claims he will provide a detailed statement of the problems for no charge. Few firms that are conscientious can afford to give away this service.

Reputable consultants may charge fees like this:

- One quotes a fixed fee based on estimated man days of engineering. If the job takes less time than figured, he charges on a per diem basis, a savings to the client. If it takes longer, the client still pays only the original fixed fee.
- Another determines what his service is worth based on how long the job probably will take. A reputable engineer, he says, will not object to submitting an accurate estimate of time and costs.
- Another determines fee on a square footage formula, equipment density formula, and services required. These, he says, enable him to set a fixed non-changeable cost.

Most consultants consider per diem charges or fixed fees acceptable. Retainer fees also are ethical, according to consultants, but there are few consultants on retainers these days.

Read the Small Print

Most consultants insist on a written contract, but a few will go ahead on an oral agreement. Their signed contracts differ somewhat, mostly in degree, not kind.

One consultant will have nothing to do with hard contracts, those which spell out in great detail what he will do. He works only with a letter of intent or a loose contract. In his contract he spells out exactly the basis of charges, such as fees for engineers, staff, overtime, expenses, and so on. But he only assures the client that he will provide service in accordance with the Canons of Ethics of the National Society of Professional Engineers.

A large firm of consultants uses a carefully-drawn contract, including a performance clause. They tell what they will do, how long it will take, list manpower, fees per month, and out-of-pocket expenses. There often is a cancellation clause which either consultant or client may exercise.

Another consultant warns against open end agreements where a specific job, identifiable in scope, as he puts it, is to be done. But in other situations, where there probably will be no solution, he suggests a best-efforts contract.

The job is completed . . . when the consultant fulfills the contract. But it's not unethical, according to some, to return to a job years later if a better method has been developed. If he can convince the client, he may get another contract and another crack at the project.

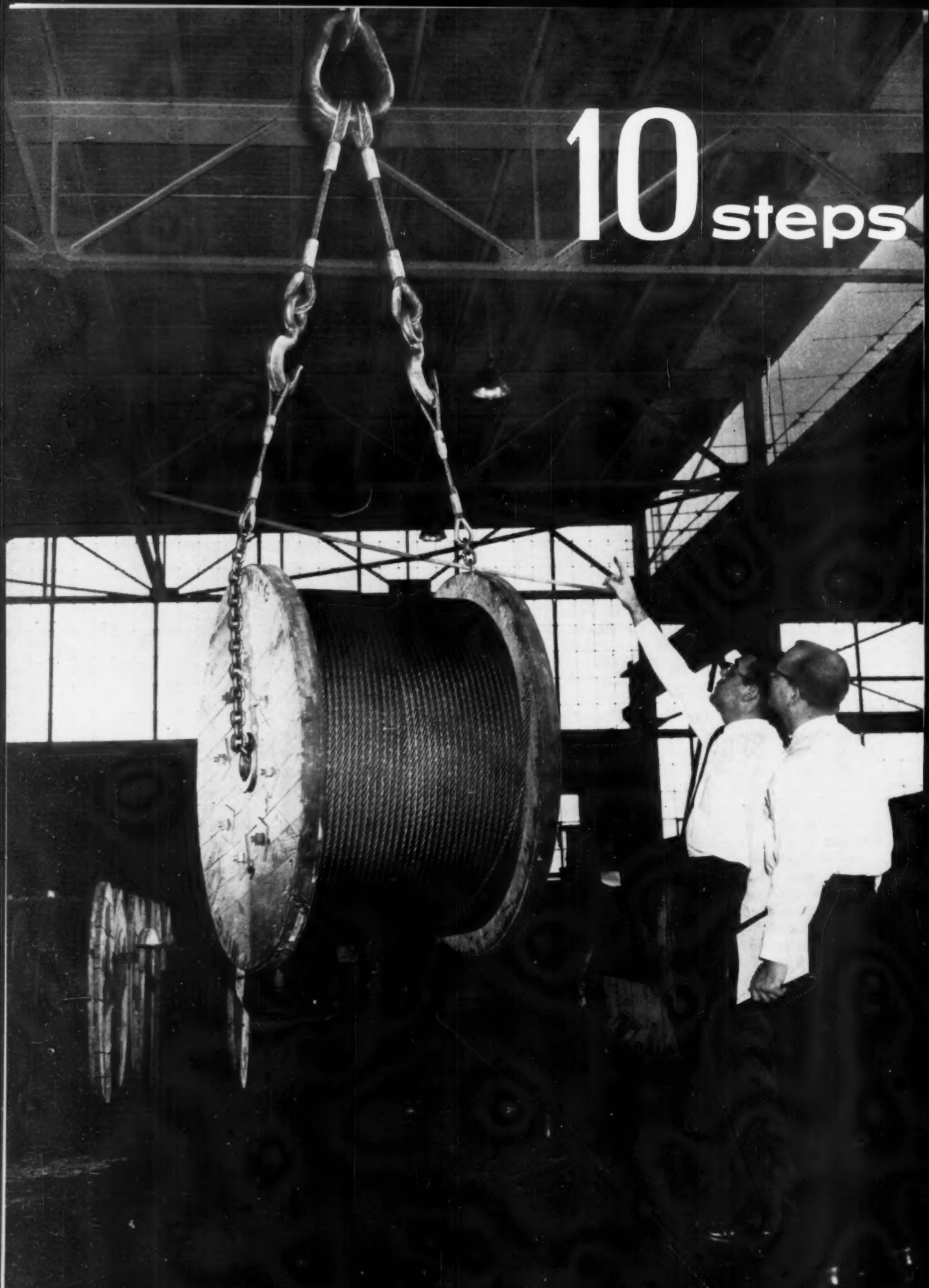
Botching the Job

This seldom happens. In fact, one consultant ingenuously admitted his firm had never made a mistake. Most consultants—if they try real hard—can remember a job or two they would like to forget.

A few consultants—and they might be classified as sort of phony—get by with merely passable work. There's a really fine line between adequacy and proficiency. His work may be good enough to escape censure. But he fails to give the client his money's worth. The net effect is higher product cost because the system is less efficient than it ought to be.

Even more reprehensible is the consultant who gets in over his head. The reputable consultant who finds himself out of his field calls in competent help. For example, one consultant who specializes in warehousing and distribution refuses to specify computers. "We don't kid anybody," he told me. "If we feel electronic equipment is necessary, we recommend a specialist who then works hand in glove with us."

Have you recourse if you get stung? Legally it's caveat emptor. The client has about the same recourse as with other professional men. Most of the reputable consultants, particularly the larger firms, will stick with a job to your satisfaction. Some of the smaller consulting firms, however, feel that as a practical matter they cannot give service past the contract stipulations. ♦


10 steps

to safe lifting

By **F. B. BESSELMAN**, *Division Engineer, Wire Rope Division, Jones & Laughlin Steel Corp.*

ORGANIZED SAFETY can work miracles. Organized industrial safety programs have made strides in eliminating fire hazards, in protecting eyes and feet. They have put guards over and around most machines, started committees to studying deeply the psychology of men, their accidents, and how they can be prevented.

Today, my industry is stressing proper ways of lifting for all industrial hoisting and lifting. Industries need overhead lifting education, then application, then organized follow-up. Here, I can only briefly touch on 10 common offenses.

1 *Improper sling hitches used for the load. Which hitch for which job?*

For safety and efficiency, you have to know the difference between a good and a bad hitch. Jobs vary in size, shape and weight, and in the number and location of points where you can attach slings. Yet for every kind of load, operators must know the right hitch to use, and where and how to attach slings. And you must know how jobs can be expected to act when all or part of their weight is supported by slings. Probably the most important single rule for all crane followers to remember is never use a spliced sling in single-cable hitch to move jobs over the heads of other people. There are several single-cable hitches, but they all have a point in common—only one cable supports the load. Nearly always you can use a second cable. It not only controls the load, an essential in moving heavy items overhead, but it's an added margin of safety if one cable fails. Poor hitching is a safety hazard, and it also causes needless expense in the form of damaged cables.

2 *No appreciation of the effect of angles on sling loading.*

Failure to recognize load-angle relations may overload cables. Keep the attachment angles as nearly straight up as practical. Example: a cable that is right for a 10-ton load at a 30-degree attachment angle is only half strong enough for the same load at a 60-degree attachment angle. The attachment angle is measured from the vertical by the wire rope industry and from the horizontal by the chain industry.

YOU HAVE TO CONSIDER the effect of angles on sling loading. As shown, left, each cable supports half the load.

3 *Lack of understanding of the center of gravity in lifting.*

I cannot stress too much how the center of gravity affects turning. It causes more trouble than any other crane operation. Most of this trouble stems from failure to understand the effect of the center of gravity on turning. The center of gravity is the point at which all of the weight of a job can be considered to be concentrated. It always acts vertically downward to bring the work to a position of equilibrium directly under the hook. Know its location and direction in which it acts, then it becomes easy to attach slings so as to obtain a pivot point and a turning action. In one-hook turning, always attach the sling above the center of gravity. In two-hook turning, one sling must be on or above the center of gravity. The second sling can be attached anywhere on the piece that will control the job during the turn. For turning, hitch the control cable so both eyes are on the hook. This prevents the job from twisting. Do not attach cables so

Mr. Besselman is an instructor of a "Safety In Lifting School" organized two years ago by the Wire Rope Division of Jones & Laughlin Steel Corp. It has covered 75,000 miles, has been shown at 55 places to over 7,500 people. The school consists of a 7-hour presentation. It illustrates safety in overhead lifting with cranes, hoists, and slings. A model crane goes with the school.

that the job turns within the hitch. Remember that the point of control over the job is the point at which the cable leaves the work. Regardless of where the cable goes, either inside the work or around it, the lifting force is applied at the point at which the cable leaves the job to return to the hook.

4 ***Overloading the lifting medium.***

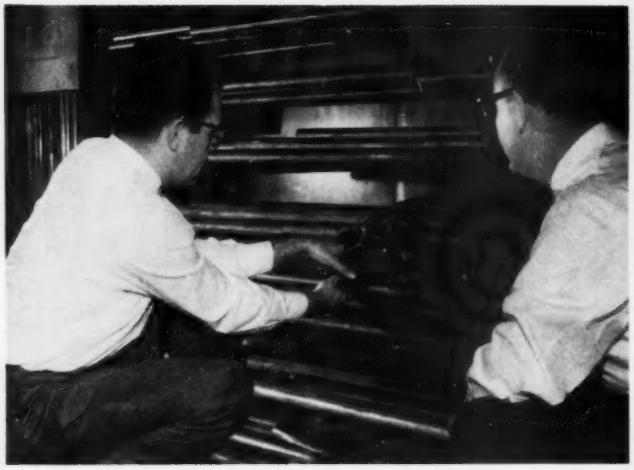
There are several terms to consider here—safe working load, recommended safe working load, and rated capacity. All mean about the same. The factor of safety used for wire rope is 5 to 1 (the breaking strength of the rope is five times the recommended safe load.) This same factor is used for synthetic ropes, synthetic webbing, woven wire mesh, and rope and slings made of wire rope components. Alloy lifting chains have a safety factor of 3.75 to 1 to 4 to 1. None of these lifting media should be used for loads very much in excess of the proper safe working load. Synthetic rope and webbing, lifting chains, and woven wire mesh will reveal by stretch when they have been overloaded. It's not so obvious when a wire rope has been overloaded. For example, a wire rope could be overloaded to the elastic limit (approximately 66 percent of its total strength) without showing any particular signs of damage. But this rope has been damaged. It should be removed from service immediately because the damage is internal. The nicked wires could fail at any moment.

5 ***Use of a damaged rope, chain, or sling.***

The use of any damaged lifting device is extremely dangerous. The most difficult job of the inspector is to decide how much damage has been done to the rope, chain, or sling. A rope that has been kinked or knotted may have lost more than half of its strength. The same goes for a rope that has been heated by flame or electricity. A chain that has been cut or twisted may be weakened to the danger point. The safest thing to do with any damaged sling: assume that the damage is greater than can be seen by the human eye. Replace it.

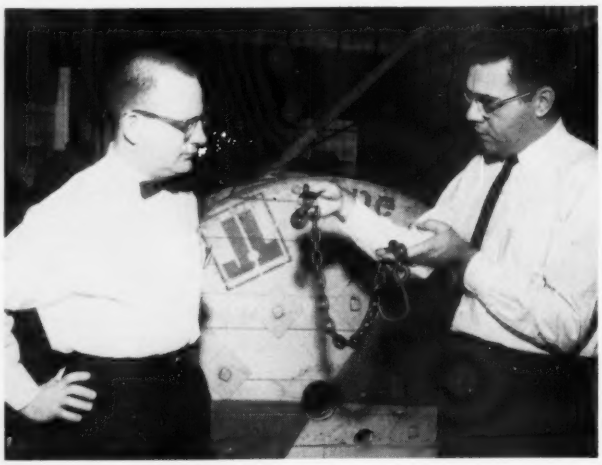
6 ***Unsafe end terminals or connections such as poured sockets, untightened clips, undersized shackles, etc.***

Socketing has to be done by an expert. If you spend money and energy securing a good piece of wire rope for the assembly and then have an inexperienced person do the socketing, you may completely undo the good effort already expended. When applying wire rope clips, you should use the correct size handwrench to tighten the nuts on the U-bolts. Too large a wrench or a power wrench may cut the rope or distort it and weaken it. Wire rope clips should be tightened three or four times during the first few days' use in order to get them properly seated without damage to the rope. They must be correctly applied so that the saddles are on the body of the rope and the U-bolts bear against, or on, the dead end. Do not stagger

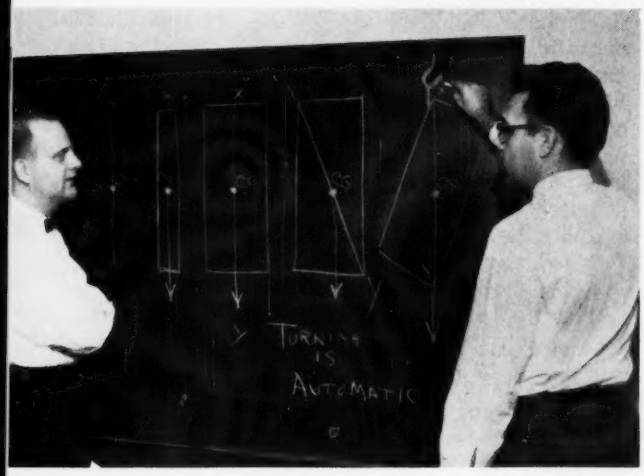


PROPER USE of double wrap hitch on a bundle of rounds is shown by Engineer Besselman to Jack E. Atzinger, associate editor of MATERIAL HANDLING ENGINEERING. Full contact keeps rounds from sliding.

A GOOD SAFETY PRACTICE: replace damaged rope, chain, or sling. It has lost an undetermined amount of strength.

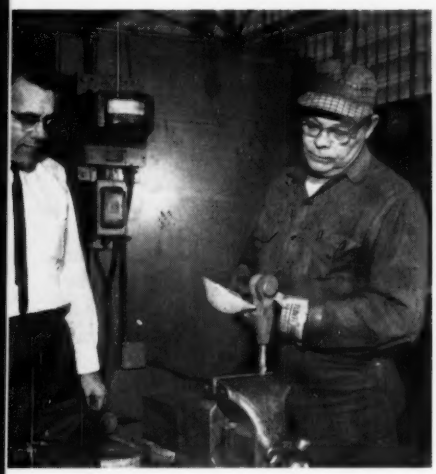


DON'T USE JERRY-BUILT RIGS. The hook on the right end of the above chain and the connector link on the other end are improvised. Lifting capacity is unknown. It's unsafe.



TURNING, control of the center of gravity is necessary. Know its location d direction in which it acts. Then it's easy to attach slings to obtain a pivot int and an automatic turning action.

THIS WIRE ROPE failed because of overload. Recoil of strands at time of rupture caused the strands to unlay. No lifting device should be used in excess of its safe working load.



N EXPERT sockets a wire rope. Terminals and other ttings should be applied to the lifting device with nowledge and care to avoid damage.

A LIFTING HOOK is designed to bear the load on the saddle. Point loading will cause the hook to open (right.) If an open hook is used, any shifting of the load may cause the rope or chain to slip off.

WIDE SELECTION of lifting devices are available for use between he hook and the lead. The application will determine the sling material o be used. Consult your engineering department, or the manufacturer.

ESTABLISH A REGULAR INSPECTION system of lifting components. One man should be trained for the job. Here an inspector checks the diameter of a wire rope. If found unsafe, he will condemn it.

them. The use of shackles with a wire rope assembly should be carefully controlled because of the possibility of the common error of assuming that a one-inch wire rope will use a one-inch shackle. This is incorrect. A one-inch wire rope has the same strength as a one and three-eighth inch shackle. The one-inch shackle has only about half the strength of the wire rope. It would be extremely dangerous to use.

7 *Point loading of hooks.*

Remember that fitting-hook manufacturers are conscientious about the development of their hooks. They are expertly designed. The hook is meant to lift vertically. The center of gravity of a load on a single hook should always be directly beneath the hook, on a line down through the shank of the hook, and through the thick, curved bottom section. A built-in safety feature of all forged lifting hooks: they will open before breaking. This opening is an immediate indication of overloading. However, with point loading, you place the load off-center, and the hook will start to open and straighten out at much less than normal safe load. When this happens, any shifting of the load may cause the sling to slip off the hook.

1. **Don't use the wrong sling hitch for the load. Know the right hitch to use, and where and how to attach slings. Never use an uncontrolled sling-cable hitch to move loads over people.**
2. **Consider the effect of angles on sling loading. Keep attachment angles as nearly straight up as practical. Don't overload cables.**
3. **Do know how to work with the center of gravity. Know its location and direction in which it acts, then you can easily attach slings.**
4. **Don't overload your rope or chain. Safety factor of wire rope is 5 to 1. Don't exceed the ⅔ elasticity limit. If you do, throw the rope away.**
5. **Don't continue to use a damaged rope, chain, or sling. It's dangerous, may break at any time. Damaged parts will sooner or later come apart. Replace immediately with new items.**
6. **Don't use unsafe end terminals or connections (babbited sockets, untightened clips, undersize shackles). An expert should do socketing. Do not stagger clips. Use the correct size shackle for the size of the rope being used.**
7. **Don't point load hooks. Most hooks are meant to lift vertically. There's no meat at the point to take stress.**
8. **Don't use homemade lifting devices. They're untested, unsound. You don't know their lifting capacity. Jerrybuilt rigs are dangerous.**
9. **Do pick the right lifting rope for the job. The right rope balances safety, strength, flexibility, abrasion resistance, resistance to crushing or distortion, cost.**
10. **Do have one man in charge of inspection of cranes, hoists, and materials used in overhead lifting. Remember, the inspection is only as good as the inspector.**

8 *Home made lifting devices.*

They're often made of leather, rubber hose, rusty wire rope. They're untested, unsound. Lifting capacity is unknown. The temper and the forming of handmade fittings are unknown. A qualified engineer should design a lifting device. A competent manufacturer should make it. My rule is when you lift, don't use jerrybuilt rigs.

9 *Wrong lifting rope for the job.*

Think of four things when selecting wire rope for the job:

- Flexibility
- Abrasion resistance
- Resistance to crushing or distortion
- Strength

The correct rope for the job will balance these four qualities. The correct rope is strong enough to take the maximum load, plus a safety factor. A rope that undergoes repeated bending must be made in a way that will enable it to bend without the individual wires breaking from fatigue. Fatigue resistance in wire rope improves as its flexibility increases. Wire rope is made resistant to severe abrasive wear by making it with large outer wires. They spread the load on the individual wires over a greater area. A correct order for wire rope means specifying completely what you want: length, diameter, number of strands, number of wires in each strand, arrangement of wires in each strand, grades of steel used in rope, kind of fabrication, type of center, and lay. When you want a rope for a certain job, consult your engineering department. The manufacturers, too, will be glad to help you select the rope for your job, will custom build a rope to suit your job.

10 *No control for care, maintenance, and inspection of cranes, hoists, and materials used in overhead lifting.*

Let me say right away that it's important for one man to do the inspecting. He becomes familiar with the machine. Wire rope on cranes, skip hoists, and other mill equipment; man cages, materials hoists and elevators should have regular inspections. Record the results. The purpose of the inspection is to estimate the strength remaining in the rope so that it can be taken from service before there is any danger of its failing. Inspection is only as good as the ability of the inspector. ♦

Union Metal Manufacturing Co.

DROP-BOTTOM BOX discharges scrap directly into furnace. Notice sides on bottom which form chute.

Efficient scrap handling spells profit

SCRAP IS SO VITAL to Anaconda Aluminum Company that it can very well mean the difference between profit and loss. It's one of their biggest nonproductive cost items.

At their Terre Haute, Indiana fabricating plant they cast aluminum into ingots and billets. They roll it into flat and coiled sheet and extrude it into tubes, rods, bars, and special shapes.

Their present scrap handling system evolved only after considering, comparing and observing many different systems. The containers they wanted had to be able to stand up under extremely rough handling. They had to be unaffected by extremes in temperature. They had to be adaptable to lift truck handling as well as handling by crane. They had to be self-stacking and have hinged bottoms for speedy dumping. They had to be self-draining so water and oil would not accumulate and be charged along with the scrap into a furnace, thereby creating an explosion hazard.

They chose as the basic item of their system a corrugated steel drop-bottom container. It holds 6,000 lb. in 54.2 cu. ft. They use this container to collect, classify, and store aluminum scrap.

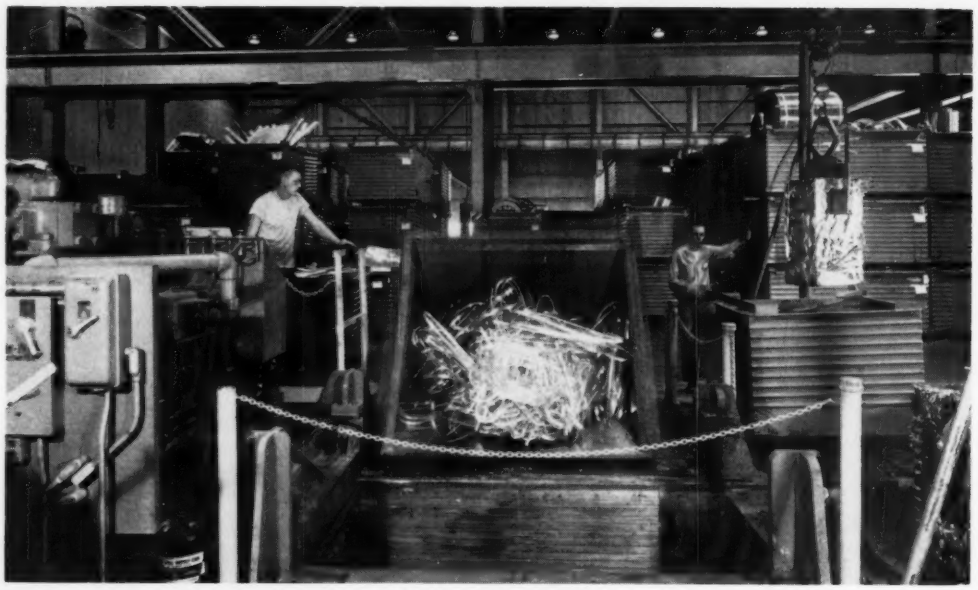
The hinged bottoms make it an easy job to dump scrap right into furnaces. This one alone avoided the need for a big expensive charging machine. The only man needed to collect scrap is the lift truck operator. To charge the furnace, he moves the truck up to the furnace, positions the load for dumping, and raises the box. The hinged bottom falls away and the contents spill into the furnace. Scrap in the form of chips, small shavings, and long slender bands are all baled before charging.

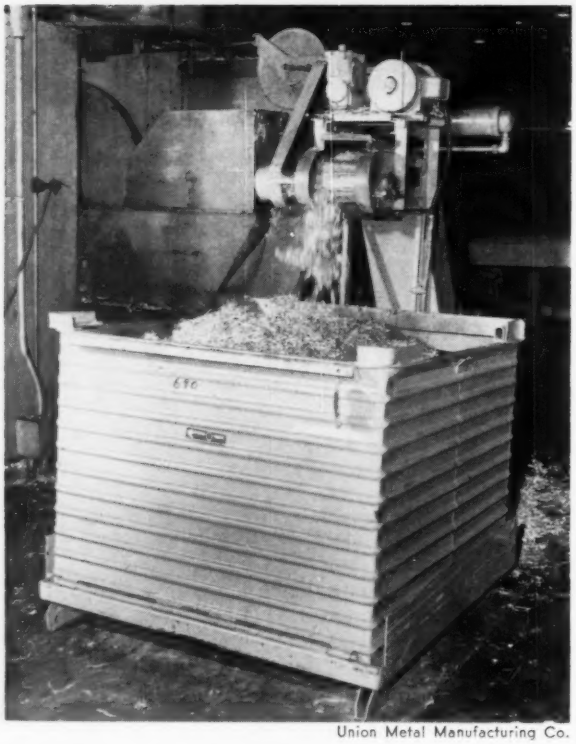
The corners of the boxes are equipped with angles which provide a receptacle for stacking. As many as four boxes can be stacked safely. Even accidental nudging by a fork truck won't topple the stack.

Sorting Made Easier

Anaconda keeps different alloys separate to insure a quality controlled melt. Card holders welded to the sides of each scrap box hold cards identifying the alloy in each box. The scrap is then weighed and stored until needed for a melt. Since the alloy and

EFFICIENT SCRAP HANDLING





Union Metal Manufacturing Co.

CHIPS ARE CONVEYED from ingot saw to drop directly into drop-bottom box (left). Chips will be baled before charging. Scrap is baled and stored in boxes (top). It will then be classified and weighed, then stored until needed for a melt.

CARD HOLDERS are welded to the sides of the boxes. Cards are inserted which identify the type of alloy and its weight.

its weight are clearly shown on the cards, it is an easy job for Anaconda's engineers to control the quality of the melt. This not only means a higher quality melt but also lower melting costs. By changing the cards after dumping, the same box can be used to collect scrap of a different alloy.

A smaller container, two-thirds the size of the scrap box, is used to collect and remove burnable waste. Every department of the mill uses these containers. They have improved housekeeping tremendously.

Light scrap from the shear line is collected in a U-shaped corrugated steel tray. It is mounted on steel runners so it can be handled by a fork truck without extra blocking. One side of the tray slopes forward for easy dumping. This tray, with its open ends, is especially useful for collecting long pieces of scrap. Like the scrap box, it can be used for charging furnaces.

An outstanding feature of othe system is the low replacement cost. The boxes and trays are used daily, often continuously for 24 hours. They are constantly given rough treatment. They are pushed, dropped, jammed against each other, and are continually exposed to extremes of hot and cold. Yet up till now they have not had to replace any of these items. Every container works as good now as the day it was bought.

PROJECT Upgrade

Second article in a series to help material handling men prepare themselves for the growing responsibilities of management of material flow.

How material control aids your company operation

By **E. RALPH SIMS, JR.**, *Consulting Editor*

THE MATERIAL HANDLING FUNCTION is of no value and creates no value.

Material handling adds nothing but costs to the product.

These statements will be argued by those who assume a value in "time and place utility." I disagree with their thinking. Here's why. If you assume a value for time and place utility, then you should be able to change the value of a product by changing the amount of material handling in the system (revising your inventory policy, improving scheduling, relocating machinery, redesigning the product, etc.). We contend that value does not change. The value of a product is intrinsic in its useability—not in its location, place availability, or current price.

In analyzing the economics of material handling, therefore, we must first assume that all of its costs are a waste of money. No value has been added to the product by them. To use a fantastic example: if matter could be transmuted by telephone, there would be no need for finished goods material handling and warehousing. But the value of the product to the consumer would remain the same.

Take another fantastic example. Suppose you can buy a convertible from a dealer down the street for $3000. If you had to go halfway around the world to get the car and bring it back, it might cost you another $2000. However, the car's value—its usefulness to you—would be the same. Value would not have increased for having acquired time and place utility in your local dealer's showroom. The lower acquisition cost down the street might be construed as value by some; I do not hold this viewpoint.

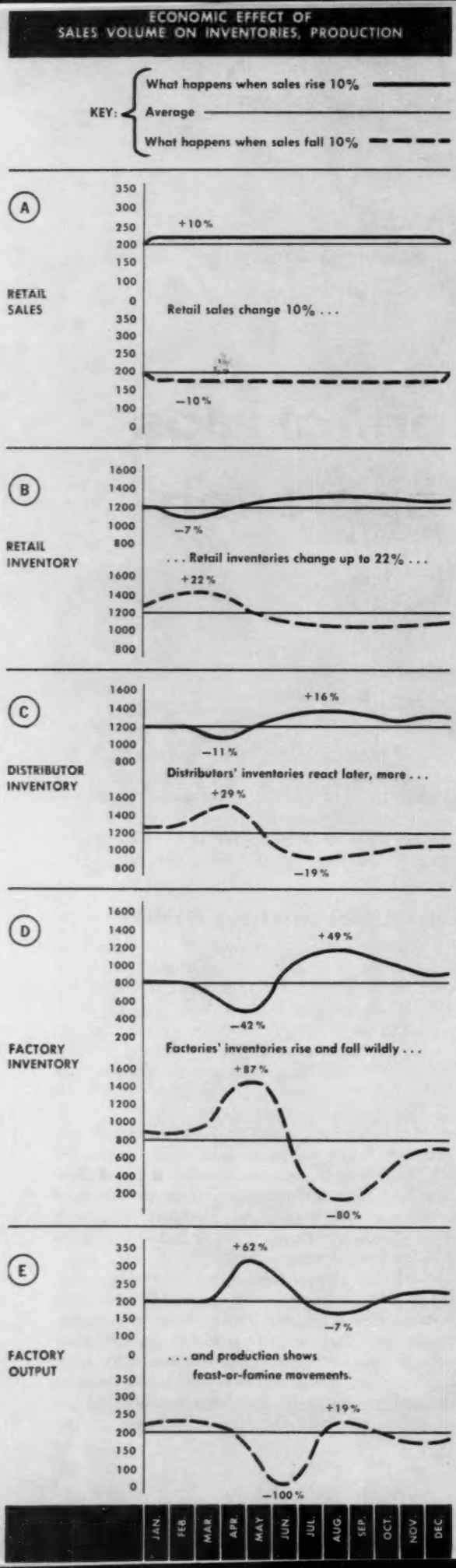
The same thinking applies to the transfer from machine to machine and from raw material source to factory. The value of the product lies only in its usefulness or desirability to its owner. Its location has no intrinsic value. If the product is hard to get, its price may be higher—but this does not increase its value.

Inventory: Both Asset and Liability

What are the economics of owning material? If an inventory is owned, it has value in the sense that it shows on the books as part of the net worth of the company. It can be converted into cash through sales. But inventory also incurs liabilities. These include housing (rent, insurance, depreciation, light, heat, etc.), interest on capital, and the cost of personnel to handle and supervise it. In some States, inventory is subject to personal property taxes.

From the consumer's point of view, inventory has only one significant value—its availability when he needs it. Therefore, if you can develop a direct flow from the last manufacturing operation to the consumer without maintaining an inventory, you will significantly reduce inventory dollar lock-up, operating costs, and management problems.

I contend that the purpose of an inventory warehouse is to serve as an eraser or surge tank to correct the errors, inefficiencies, and inadequacies of management techniques. If you could perfectly balance production with sales, if you could forecast sales with complete accuracy, and if your systems could respond to sales changes instantly, then you would need no finished goods inventory. Modern inventory manage-



PROJECT UPGRADE

ment techniques and computers are leading a trend in this direction; they permit tighter inventory control with lower levels of inventory investment.

A man who manages material flow must weigh the advantages of making inventories smaller against the need for inventory as a corrective factor. Only then can you properly evaluate material handling systems associated with in-process and finished goods inventory. It is ridiculous to consider mechanizing the handling and storing activities that relate to merchandise which is not necessary to the achievement of business goals. Your first step in tighter inventory management, therefore, is to reduce the quantity of material to be stored and handled, and to increase the precision of the control. (The question tabulated on page 68 will help you do this.) Then mechanize the remaining material handling functions as much as possible.

Cut In-Process Inventory

When mechanizing, arrange equipment to control inventory and to promote material flow. For example, if Machines A and B are 30 feet apart, and if they work consecutively on the product at the same output rate, move them together. Interlock them with transfer conveyor equipment. You thus reduce in-process and transfer inventory, and avoid handling cost.

On a broader scale interlocking can affect all flow of materials, from raw through production, to the consumer. The whole flow of materials in transit, —on conveyors, in trucks, aboard trains and ships— must be taken into consideration in computing the total economic cost of inventory. It is no longer acceptable to recognize only the direct charges involved in material handling. You must consider the whole flow, and you must know how much interest might be earned by the capital locked up in all material in it. You must also add the indirect costs of housing, storing, and transporting these materials, in addition to capital cost and over and above the direct labor and transport cost.

Move Inventory Back

Many companies have shifted their inventory back to the factory level, and even into the manufacturing cycle, as far as they can while maintaining competitive delivery lead time. Pushing inventory back into manufacturing reduces dollar lock-up, not only by decreasing the number of units of finished goods in storage, but also by carrying less labor cost in the inventory. For this reason the economics of the material handling system depend in part on marketing practices for the particular product.

It is obvious, therefore, that a manager of material flow must answer several questions about total economics before he can effectively analyze a material handling problem. You'll find these listed in a box on page 68.

For an example of how marketing affects inventory compare style and staple items: Large inventories of

Chart by Paul A. Wassmansdorf, Consultant, Marketing Administration, General Electric Co., N.Y.
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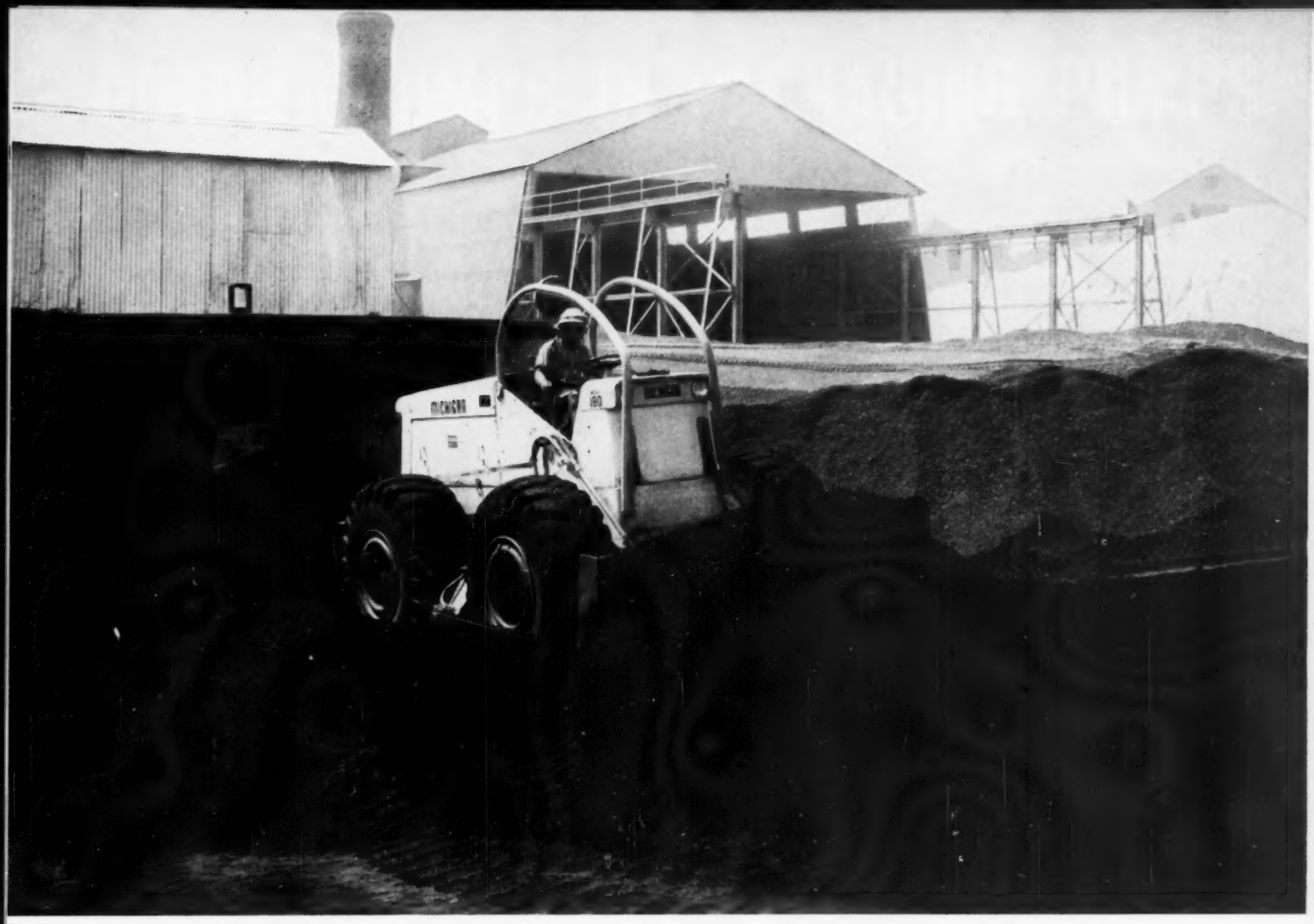

Versatile tool on six common production jobs *Mobile Michigan releases crawler, yard locomotive for other services at Universal Atlas Cement plant*

A rubber-tired 162 hp Tractor Dozer, originally used at this plant to maintain a coal stockpile, has become a versatile production tool on half a dozen typical important dozing tasks.

Owner and operator of the machine, a Michigan Model 180, is the Fairborn, Ohio, plant of the Universal Atlas Cement division of U.S. Steel.

In a typical year, their unit dozes coal, clay, limestone, gypsum and cement clinker at an average rate of more than 300,000 tons. It also moves an average of 1,000 coal gondolas a year, each loaded car weighing 55 to 70 tons. And on many days it travels 15 miles under its own power to help clean up around shovels in the limestone quarry.

Dozes coal at 10 mph

One of the Michigan's most important operating traits, according to Universal Atlas plant executives, is its ability to thoroughly mix and remix coal on the stockpile. This is important because coal received from various mines differs in BTU content and must be blended for most efficient burning. They attribute the successful blending to two Michigan advantages. One, the Model 180 *dozes at speeds up to 10 miles per hour*. Two, its blade design *rolls* the coal as the Dozer moves forward.

Spontaneous combustion eliminated

Equally important, production men say, is the Michigan's compacting ability on both the coal and clay stockpiles. They haven't had a coal stockpile fire since the 35,850 lb Tractor Dozer was placed in operation, and erosion by both wind and water on the clay stockpile has been effectively reduced.

Another task successfully assigned to the Michigan is "muling" coal cars from rail siding to coal shaker dump adjacent to the stockpile. By handling up to five loaded gondolas at a time, it has released a yard locomotive for other plant operations.

A variety of other dozing jobs are done by the machine as well. For example, it cleans up around rock shovels in the quarry. It stockpiles clay and crushed rock. And it works in winter cleaning and shaping the highly-abrasive cement clinker storage pile.

We'll demonstrate for you

We'd welcome the opportunity to show *you* how a Michigan Tractor Dozer's versatility, power, speed—and dependability—can increase production on your job. Four sizes to choose from: 162, to 600 hp.

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style items are risky, because obsolescence may destroy market value. Style items, therefore, demand tight controls and short inventories. An inventory of staples involves less risk. Only the lost interest on capital tied up in stocks, and the expenses of storage and attrition are incurred. With either staple or style items, however, minimum inventory in the system and maximum flow produce a net economic advantage.

QUESTIONS
which help you apply economic principles to Material Control

1. Is this function necessary to the total operation of the company?
2. Are these materials (inventory) necessary to the company, and how much do they cost?
3. What parts of the business are affected by or affect maintenance of this inventory?
4. How will it affect operations if we:
   - remove this material from the system by relocation of machines, better production control
   - reduce inventories to minimum required for maintenance of schedules
   - shift material to another point in the system
5. Will method of material handling be changed if present levels of product or material ownership are reduced to the minimum acceptable for maintaining smooth operation?
6. Is there any material handling method which will permit in-process handling, storage in transit, or a relatively small inventory bank, while maintaining effectiveness of the system?
7. Will the system we are about to recommend permit those fluctutations in inventory which may be necessary to the financial and sales management of the company?

We can sum up recommendations for dealing with inventory by suggesting these goals: 1. Keep inventory out of warehouses, stockpiles, and banks, and keep it on the line of flow, moving to the consumer. 2. Keep the flow flowing. 3. Keep the inventory as far back in the system as possible, to reduce locked-up costs of transport and processing, and taxable value.

A Weapon Against Recession?

The implications of these principles are not fully understood in all cases. The graphs on page 66 reveal how important they can be to the individual company. The curves show that a small change in sales volume causes wide swings in production rates and inventory levels. These fluctuations may be a factor in producing general recessions. If so, then our concepts of material flow control as a continuous stream from raw material source to consumer take on added importance. We must learn to tie production flow rates to the relatively stable elements of the production pattern. This will help to damp out these swings which make idle factories.

More Economic Ideas You Can Use

In this article I have dealt only with the economic effects of inventory control within a single company, and practical action suggested by these effects. This is only one phase of economics, and the subject furnishes many other ideas you will find useful in material handling work:

- **Break-even analysis:** Use it on a system, or a segment of a system, when you plan. It tells you how busy you must keep the equipment to make it earn its cost.
- **Marginal productivity:** May suggest the best way to equip so you can handle unusual peak loads.
- **Opportunity cost:** Helps you select those improvements which should have priority.
- **Cost-output and cost-size functions:** For use in deciding how much capacity brings the greatest profit.
- **Capital rationing theories:** These steady your thinking when business activity reaches the extremes of boom or recession.
- **Demand elasticity:** An aid to understanding the sales department's point of view.

Besides having some practical application to work at hand, economic principles help to explain the actions of competitors, and the course of business as a whole. They also suggest figures, charts, and words which can be used in presenting ideas to management. One warning: Don't use economists' jargon in making a presentation. Don't say, "Installation of the proposed machine is justified from the aspect of opportunity cost." Use plain language. Say, "Each dollar invested in this proposed machine will save 43 cents a year, 10 cents more than the best alternate use of our money . . ."

It is impossible for the materials handling engineer to ignore the relationship between the economics of owning the materials he is handling and the company's over-all management and their effect on the nature of the system he is about to install. It does no good to recommend a highly efficient handling system which will rapidly and effectively move materials that you shouldn't own in the first place. ♦

FOR FURTHER READING:

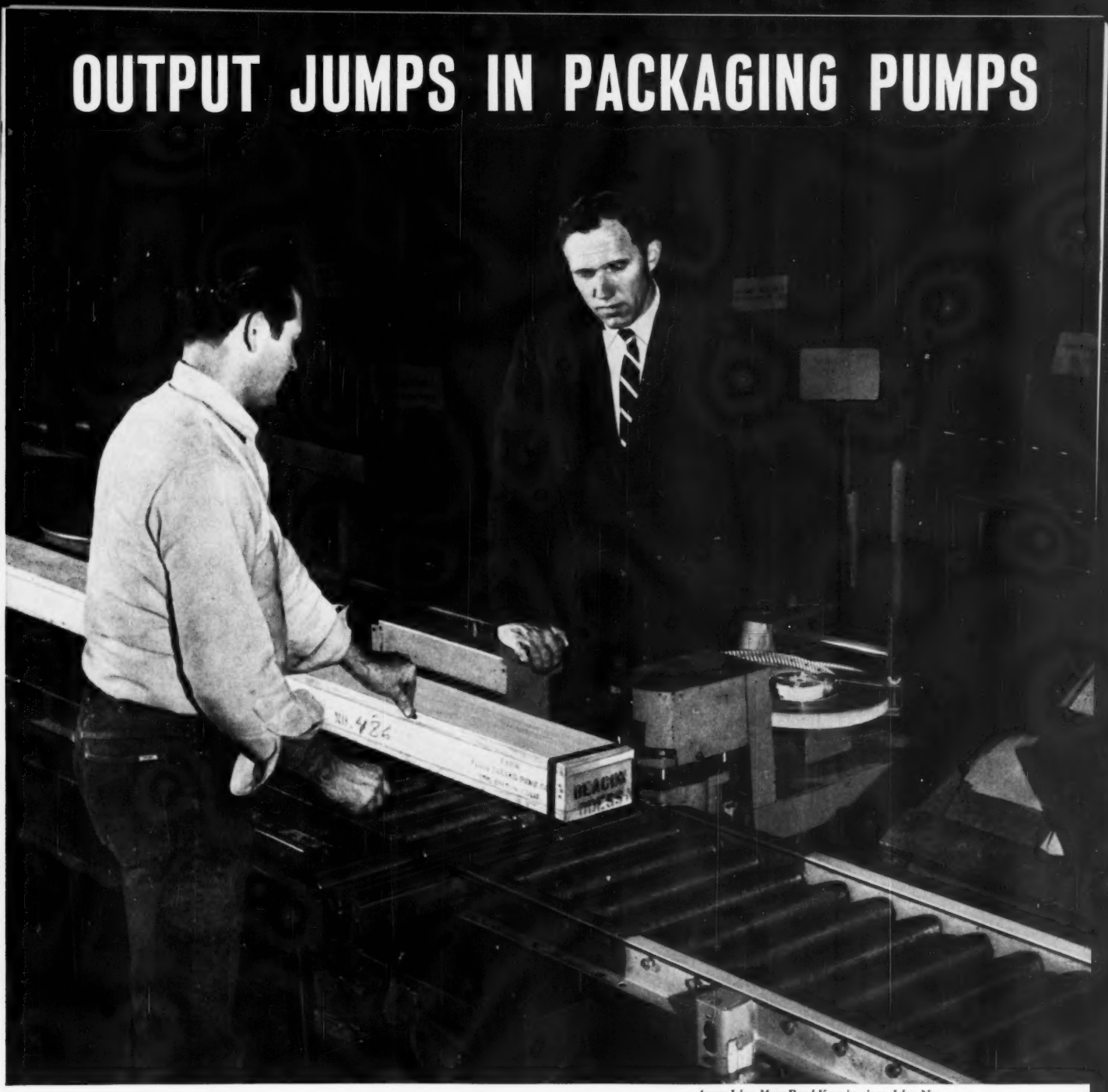
ECONOMICS, AN INTRODUCTORY ANALYSIS—*Paul A. Samuelson, McGraw-Hill. (Economic fundamentals)*

ECONOMICS OF AMERICAN INDUSTRY—*Alderfer and Michl. McGraw-Hill. (Describes economic features of important industries.)*

MANAGERIAL ECONOMICS—*Joel Dean. Prentice-Hall. (Advanced theory, and how to apply it to business situations)*

DICTIONARY OF ECONOMICS—*Sloan and Zucher. Barnes & Noble. (Comprehensive explanation of terms).*

OUTPUT JUMPS IN PACKAGING PUMPS



Acme Idea Man Paul Koenig views Idea No. S1-10 which he suggested to Fluid Packed Pump Co., division of The National Supply Company, Los Nietos, Calif.

Precision oil well pump parts are now packaged 50% faster, and more securely, since Fluid Packed Pump Co. integrated an Acme Steel F4 Strapping Machine into their conveyor system.

The F4 applies strapping tightly, with *consistently uniform* tension, then seals and cuts it automatically—all through pushbutton control.

Ask your local Acme Idea Man how automatic strapping can help you gain better packaging at lower cost. Or clip the coupon for details.

ACME STEEL IDEA LEADER IN **STRAPPING**

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Acme Steel Products Division
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135th St. & Perry Ave.
Chicago 27, Ill.

Please send me Idea No. S1-10 and examples of how major companies in my field use Acme Steel Strapping.

*Name*_____

*Title*_____

*Firm*_____

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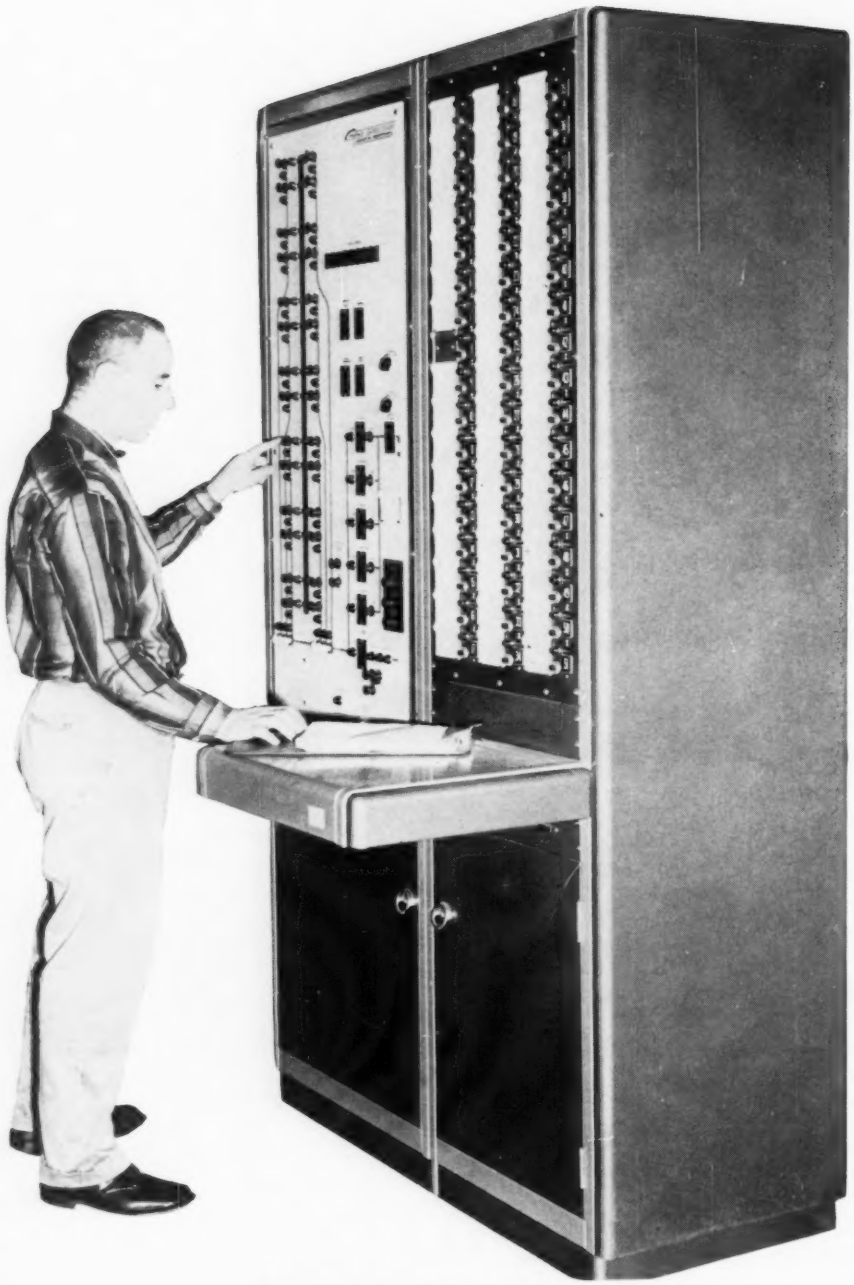
*City*_____ *Zone*_____ *State*_____

Electronic cop speeds

By **HENRY LEFER**, *Eastern Editor*



ELECTRONIC TRAFFIC COP is role of this console which shows what is taking place on the 4800 feet of accumulating and sorting conveyors. Operator here can release and route tote boxes.

IN ONE GIANT STEP the U.S. Naval Supply Center at Bayonne, N.J., has just increased its capability to move supplies 60 percent. An electronic traffic cop automatically governs movement of supplies from point of pick to point of pack, as they travel over a 6000-ft. network of power and gravity conveyors.

Though saving of trained manpower is an important feature of the installation, that's not all that Rear Admiral Frederick L. Hetter, commander of the Center, demands of it. Speed is a prime need in military supply, and Hetter says the new equipment enables the Center to process 60 percent more items than before—7,200 *vs.* 4,450 in a single workshift. Added capacity provides for a growing workload. Requisitions in October numbered 73,865, largest total on record. (The monthly average used to be 50,000). The number of items stocked is also increasing, due

THIS DIAGRAM SHOWS layout of mechanized material flow system designed for Bayonne Naval Supply Center by the Center's supervisors, assisted by engineers from the U.S. Naval Supply Research & Development Facility, and from private industry's engineering sources.

Navy warehouse traffic

largely to adoption of electronic devices by the Navy. Increases amount to as many as 1,000 items a week.

Just a Beginning

As in all warehouses, manpower engaged in material issuing and sorting—moving goods—was the fattest target for saving time and manhours. Hence it was tackled first. As soon as possible it's planned to add electronic data processing. Then incoming orders will trigger completely automatic material gathering, including mechanical order picking.

And the next big step after that will reorganize flow of material from packing to the freight terminal. Then, says Adm. Hetter, "electronic impulses from ships of the fleet . . . fed into data processing machines ashore will bring material out at the other end like gumballs from penny machines."

Major Supply Center

The Bayonne Center is a major base, occupying 24 large buildings and plenty of yard storage area to store 300,000 items. Of these only 245,000, stocked in two buildings, are the comparatively fast movers suitable for the new system. Automation just doesn't fit objects like anchors and antisubmarine nets.

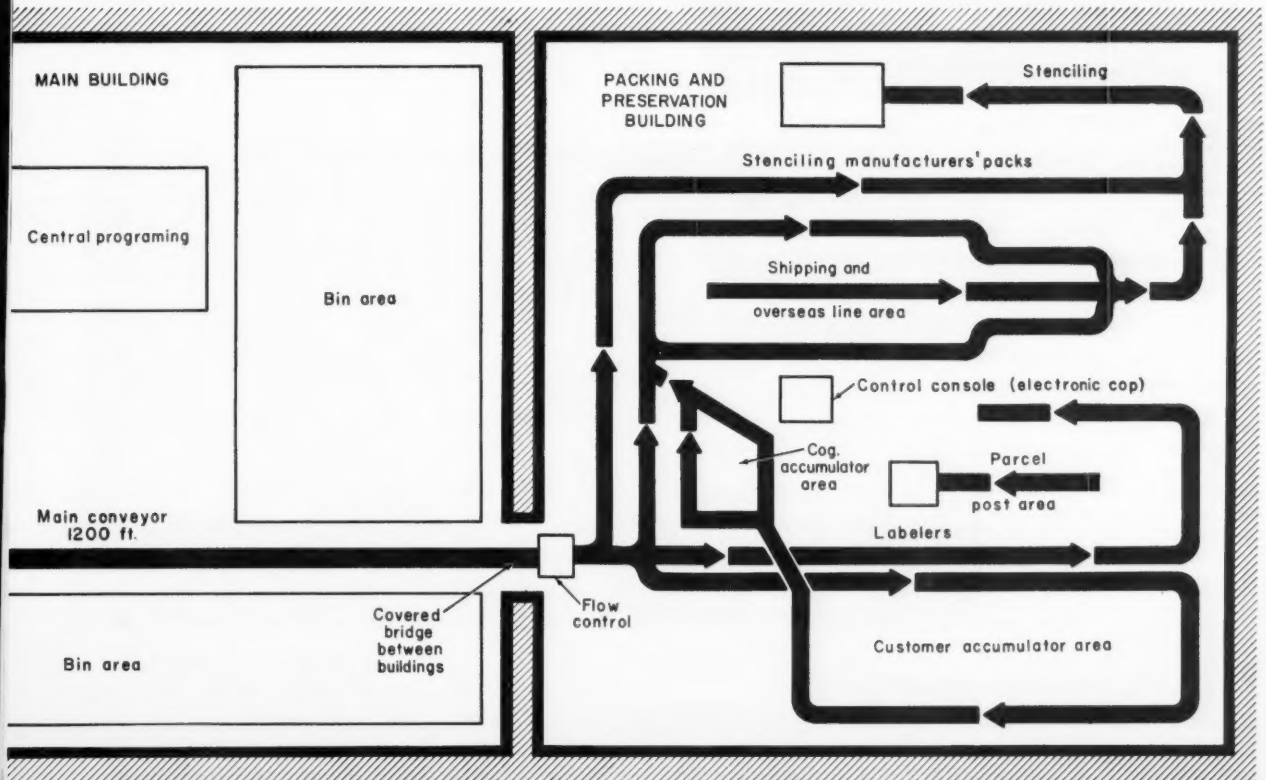
The first phase of installing the new system was to put 90-day stocks of the 245,000 active, binnable items in bins on the second floor of the Main Building. Bulk quantities for quick replenishment were placed on upper floors. The extent of the bin area is made evident by the fact that the main conveyor, bisecting the rows of bins and extending over an enclosed bridge into the adjacent Packing and Preservation Building, is 1,200 feet long.

How the Center Fills Orders

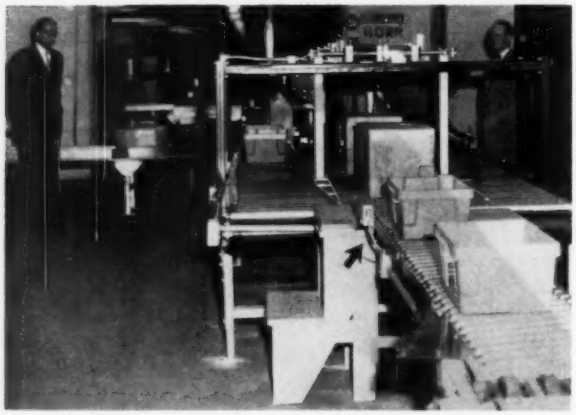
Incoming orders start at a Central Locator Bank (processing department). Individual requisitions are made for each item. A Programming Section then plans the work for pickers and packers. Two shifts of programmers keep well ahead of pickers.

The individual requisitions are placed at the proper bin row to serve as picking slips. The stock picker places each item picked in a separate plastic tote box. If the item is part of a large order, the picker also places a punched card, furnished by the Locator Bank, in a holder on the side of the box. This card, read by a sensing device, routes the box to the proper accumulator line in the Packing and Preservation Building across the bridge. There are 51 accumulator lines, each able to hold 32 tote boxes. For larger orders the Programming Section assigns extra accumulators.

Every tote box also has 6 metal tabs. Whether the

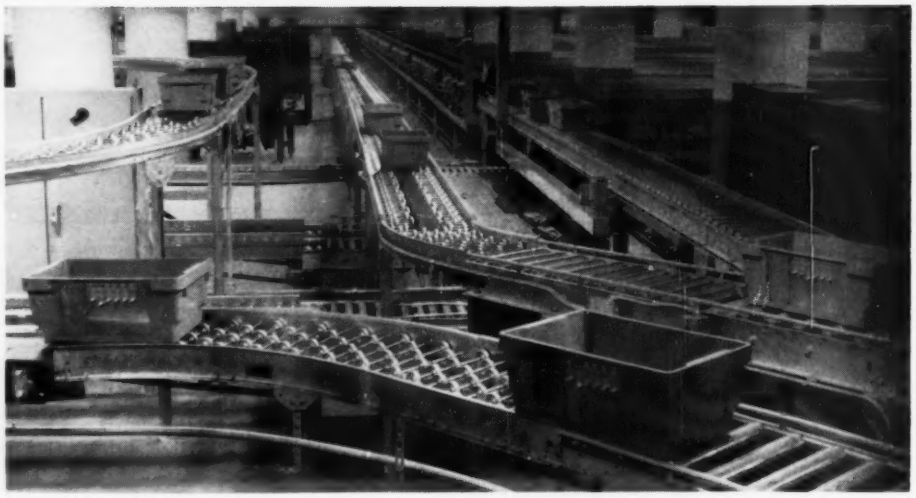


box has a punched card or not, the picker sets one tab. This automatically routes the box to the packing station which handles the material in the box.



SWITCH AUTOMATICALLY SORTS boxes for Special Programs and Manufacturers' Pack areas (left and center portals). Unsorted boxes take right conveyor to next switch. (Note sensing unit, by arrow in center foreground).

SENSING DEVICE reads punched card on side of tote box, to send box to proper accumulator line. Depressed tab will send box to preselected packing station.



LIKE ROLLER COASTER complex of conveyors criss-crosses sorting and packing areas. Main conveyor and 51 accumulators are at right, parcel post center, lines to special program, manufacturers' pack, and are at left and in foreground.

Electronic Traffic Cop

This mechanized system can feed one tote box every 4 seconds from picking to packing. Packers are still human, and flexibility must be built into the system to keep them from being swamped by this relentless pace. The electronic "traffic cop" does this job. The cop is a console which tells an operator what is going on in all parts of the 4800 feet of interconnected conveyors which sort tote boxes, accumulate them, and feed them to the packing stations. From this console the operator directs orders to packers who are free, and releases accumulated strings of boxes when the console's picture-in-lights tells him large orders are complete.

In addition to controling the 51 accumulator lines the console governs conveyor routings corresponding to 6 classifications of items. These classes, represented by the 6 tabs on the tote box, are:

1. **Accumulators;**
2. **Special Programs** (usually large orders, for outfitting new ships or ships being overhauled);
3. **Items for Parcel Post;**
4. **Manufacturer's Pack:** (items in packages which require only readdressing for reshipment);
5. **Direct Pack:** (when only 1, 2, or 3 items are on an order, each is packed and sent individually);
6. **Freight Rate Breakdown:** (sorting to get best freight rates).

Controlled Complexity is Efficient

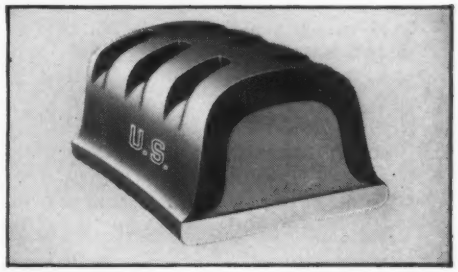
The necessity of the electronic traffic control becomes clear when you see the 4800 feet of accumulating and sorting conveyors, criss-crossing at various levels like a roller coaster, speeding goods through the enormous warehouse to assemble a big order for a ship due to leave port in a few hours. No camera can capture this picture of efficiency dominating complexity.

Such efficiency pays for itself. Adm. Hetter estimates that the system is saving $70,000 a year, and will pay for itself in 5 years—happy news for all taxpayers, and useful intelligence for those with similar warehousing problems. ♦

CUSHIONED shock-absorbent inside TOUGH cut-resistant outside

CHOICE OF LEADING INDUSTRIAL TRUCK MAKERS FOR SOFT RIDE, HARD WEAR—U.S. ROYAL INNACUSH!

Material-handling equipment manufacturers who know most about industrial tires prefer U.S. Royal Innacush. They realize this great U.S. Royal has the only successful two-stock construction. Fully cured cushioned stock inside stays soft for the life of the tire. Don't let substitutes fool you—tires with semi-cured cores harden in use, lose their cushioning. Tough-tread stock outside to defy cuts, shrug off floor hazards. Users have found U.S. Royal Innacush actually *doubles* wear life, saves money like no other industrial tire. Try it yourself, in pressed-on or demountable type.



Don't forget to specify "U.S. ROYAL" on your new equipment.

U.S. ROYAL SAFETY 1st TIRES

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Rockefeller Center, New York 20, N. Y.
Please rush me your complete industrial tire manual.

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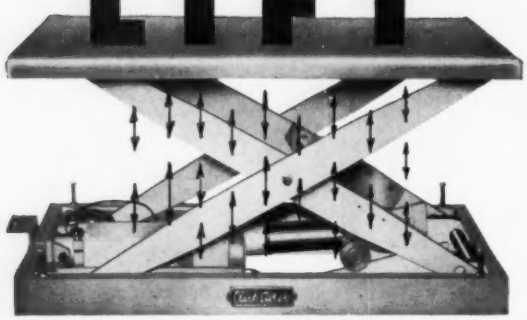
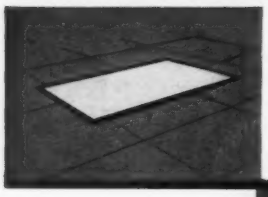
EASY WAY
TO GET A
LIFT



FOR LOADS UP TO 6000 LBS.—IN MATERIALS HANDLING SYSTEMS OR FOR CONVENIENT PORTABLE USE

Standard sizes afford a wide selection of heights that readily adapt them to changing requirements—from floor level to a height of 48" and will lift up to 6000 lbs. depending on the unit. Control is fast and sure for any height positioning and with electronic accessories automatic positioning is available. Special cradle tops are available for handling paper rolls and other cylindrical materials.

Clark-Aiken STANDARD LIFT TABLES



FLOOR LEVEL INSTALLATIONS WITH SAFETY TOE GUARD

Tables may be flush floor mounted with disappearing toe guards for safe operation.

EASY TO MOVE FOR PORTABLE USE

Portable unit is wheel mounted; makes easy mobility around the shop for your requirements.

Send today for informative bulletin. Tell us your requirements and we will recommend table size.

THE Clark-Aiken COMPANY
105 HART ST. LEE, MASSACHUSETTS

Canadian Representative: Gordon W. Keates
133 Flora Drive, Scarborough, Ontario

Circle 28 on Reader Service Card

Cut costs with indoor-outdoor handling

WITH 200 DIFFERENT sorts, textures, sizes, and colors to deal with, the Southern Brick Company, at Ninety Six, S.C. still handles a million bricks a week. They credit this output to:

- A well-planned layout.
- Specialized fork trucks.

Charles R. Lamar, shipping superintendent, says this about Southern Brick's handling system: "Our high degree of mechanization here at Ninety Six is

AS CUBED LOADS are restacked on trailers, loaders inspect the bricks and toss rejects into self-dumping hoppers. The hoppers are spotted by each trailer being loaded. Fork trucks pick up the hoppers, take them to a dump area.

FORK TRUCK picks up a cube of brick to deliver to a trailer in the loading shed. This is a handling step when trailer loads of blended brick are required. In an average day, the fleet of five fork trucks handle 330 cubes this size.

Clark Equipment Co.

coupled with the latest material handling equipment. This combination enables us to deliver brick to South Carolina jobs for less than a penny a pound. This price makes brick one of the lowest cost building materials on the market. We're proud that we've been able to keep our prices so low that we can compete in markets as far away as New England."

Southern Brick renovated their original plant in 1957 and 1959. They added two continuous kilns with a daily output of 144,000.

Four fork trucks handle output from the new kilns. These trucks are equipped with pnuematic drive tires and cushion steer tires. The trucks are rated at 2,000-lb. capacity (24-inch load center) and are equipped with special attachments for handling cubes of brick.

"We chose them because their pneumatic drive tires give good outdoor traction," says Lamar. "They cushion the load from shock, yet you can steer as easily as you steer cushion-tired trucks. The trucks run on smooth indoor surfaces and in the storage yard, so the combination of tires enables us to handle cubes faster with less chance of load shifts."

Steering Effort Reduced

Southern Brick reports that steering is easy because the point of tire resistance of the cushion tire is close to the pivot point of the king pin. This gives the driver a mechanical advantage in overcoming the turning resistance of the tire. The resistance is also lessened because of the smaller ground contact area of the cushion tire.

The four trucks were factory-equipped for LP-Gas. According to Lamar, "We feel that LP-Gas pays. We have almost 3,000 hours on one truck and around 2,500 hours on each of the other three. We've had no maintenance costs on any of these trucks except for oil changes and lubrication."

Southern Brick's fork trucks handle 200,000 bricks a day. The standard cube has 600 bricks in a hack, 32″ x 32″ x 5′. They set on kiln cars. The cubes have voids at the bottom. They're spaced so the attachment forks can be positioned under each cube.

Six cubes, making a total of 3,600 standard 8-inch brick, are placed on each 6 x 9-1/6 foot tunnel kiln car. Each kiln handles 20 cars daily. Hydraulic rams slowly move cars through the kilns so that a car of burned brick comes out every 70 minutes.

The fork trucks move cooled, burned brick from kiln cars to outside storage or to trailer trucks or box-cars. A large part of the finished ware is loaded directly onto trailer trucks for delivery to job sites or to building supply dealers in Georgia and the Carolinas.

Often, five or six semitrailers are in the loading area at one time. The fork trucks deliver 600 bricks per load, and set the cube on the truck bed. Loaders quickly begin to restack the brick according to the loading pattern of the truck. They inspect the bricks as they restack.

Southern Brick disposes bats (rejects) efficiently. They keep a self-dumping hopper beside each truck being loaded. As loaders come across the bats, they toss them into the hopper. When it's full, the fork truck removes it to a dump. The hoppers are easily emptied. The fork truck operator merely lifts a lock handle on the rear of the hopper. The hopper tips forward, dumps, and automatically returns upright and locks. It's then ready to be returned to the truck loading area.

Formerly, the men stacked bats on trailer truck beds. As the trucks were on their way out of the plant, they had to stop at dump areas so the bats could be thrown from the truck. Now, one fork truck operator disposes of all the bats in an hour's work each day. ♦

Same ICBM package is

LYCOMING, DIVISION OF AVCO CORP., SHIPS missile fuel chambers in a highly versatile box. It's sturdy enough for rail and truck transport but light enough for air travel. It's strong enough to deliver the chambers undamaged. But the boxes are cheap enough to keep packaging costs well under 1 percent of the shipment value.

What's more, the box is reusable and expendable. It makes a 320-mile round trip by truck from the manufacturing plant in Connecticut to Pennsylvania where the fuel chamber is heat treated. But the 3,000-mile trip by air, rail or truck to Aerojet-General in California makes it expendable. Lycoming figures the cost of returning the box is prohibitive.

A bonus: the base of the box becomes a dolly by placing casters underneath.

Lycoming makes the fuel chamber (which is also the outer section) for the second stage of the Minuteman missile. This is an Air Force ICBM, inter-continental ballistic solid fuel vehicle. Lycoming is a subcontractor for Aerojet-General.

Why All the Fuss?

This fuel chamber has a steel skin 0.07 inches thick. Its tolerances are extremely close. The chambers must arrive in California without dents, scratches, or fingerprints. Furthermore, it corrodes easily, so protection must be precise.

Lycoming told its packaging engineer, Earl G. Marsh, to design a package for the fuel chamber. There were no specifications, no prior experience, no opportunity to test the package. But it had to be just right. And it had to be ready when the first fuel chamber came off the line.

Marsh delivered. He developed a cradle, shock mounting, and size specifications. General Box Co. engineers helped with the box materials.

What They Made

Security prevents us from giving exact dimensions. But it's a 211-cu.-ft. rectangular wirebound box with tie corners. Floor and runners, sides and top are hardwood. The box weighs 720 lb. and the fuel chamber weighs 800 lb.

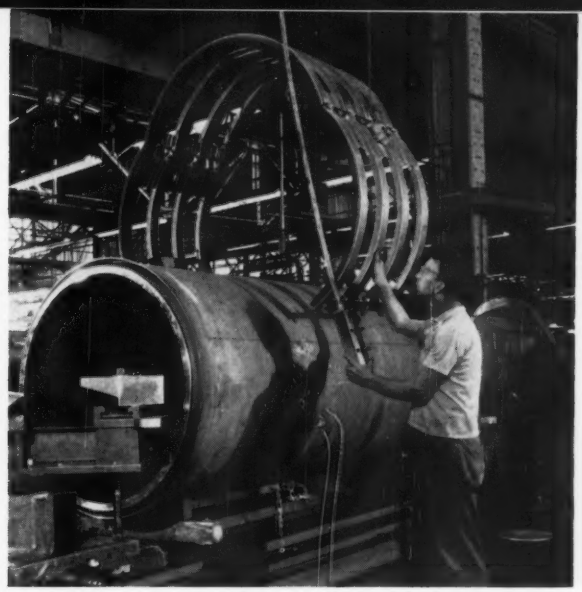
Key to protection is a cradle with four rubber shock mounts bolted to the box floor. The cradle has plywood and hardboard ends, with semicircular cutouts to hold the ends of the fuel chamber. The cradle ends are connected by two 10-ft. 1 x 10 side pieces and two 10-ft. 2 x 6 base plates.

Workers first clean, then coat the fuel chamber with a preservative. Then they wrap it in a waterproof, oilproof material (MIL-B-121 Grade C). Pressure sensitive tape seals the wrap.

Steel strapping, attached to anchor plates in the long cradle boards (1 x 10's), holds the fuel chamber securely to the cradle ends. This is not enough, however. Early experience (three dislodged chambers) showed the need for end stops, sort of outer cradles at each end. Marsh reports not one loosened chamber since these were made part of the package.

Further protection: strips of 1/16-inch synthetic rubber line the two supporting cradles. Strips also go beneath the steel strapping, where it binds the chamber.

REUSABLE EXPENDABLE



HANDLING the fuel chambers is ticklish because they may not be scratched, dented, or fingerprinted. This hinged, multiple-ring unit has pneumatic tubes which, when inflated, grip the chamber gently.

FUEL CHAMBER is fastened securely to the base. Then the cover is lowered to fit snugly around the 2 x 2's built up on the base. The fuel chamber is coated with preservative and wrapped watertight. The box and cradle arrived knocked down at Lycoming. They're assembled as needed.

FORK TRUCK lifts one end of completed package, shoves it on truck trailer. Strips of steel and two nails in each hold package hood to the base. This was found faster than lag screws.

Now, the hood—four sides and the top—is lowered over the base, making contact with a rectangle of 2 x 2's fastened to the base. Workers then nail on steel strips, five on each side, one at each end. Nailing, says Marsh, makes is easier to take apart and assemble the box when it must be reused.

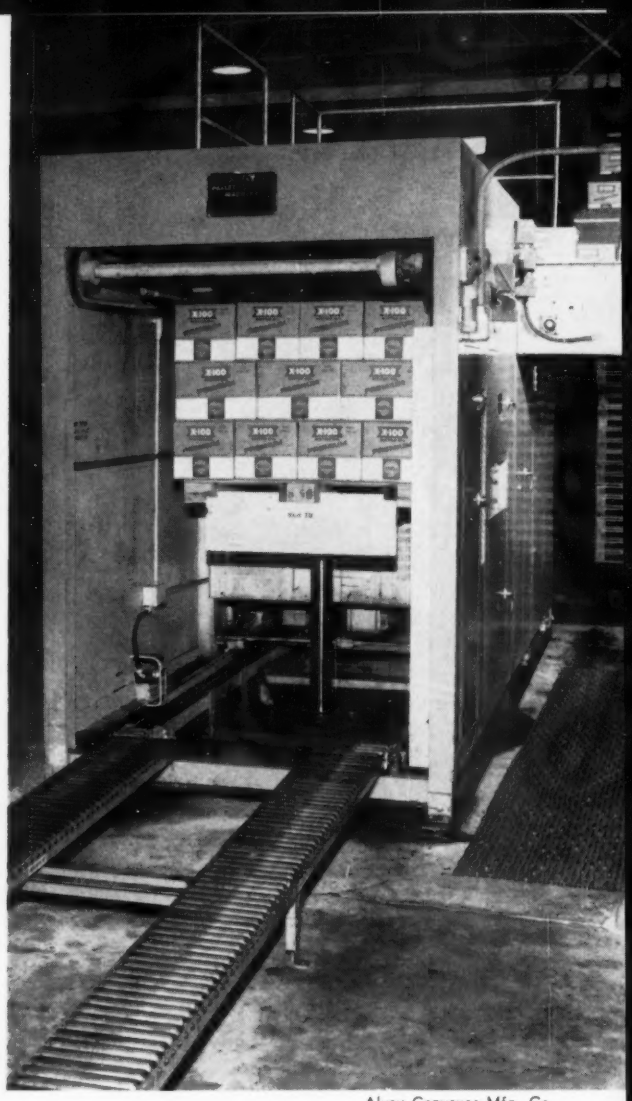
Packaging Job is Never Done

Marsh says he is always looking for a better way to package. For example, the first box he used for the fuel chamber was 300 cu. ft. Then he added those end cradles. And he found closing the box by nailing was faster than the old method of lag screws.

Marsh considered many alternatives before settling on the wirebound box. These included plywood, metal, plastic, and tri-wall (triple wall corrugated of 1,000-lb. burst test). His present method has proved itself in the last year and a half. ♦

Two articles on an important engineering subject—automatic unitizing and palletizing. This first article deals with the uses and advantages of palletizers. The second, on page 80, explains how you can fit automatic palletizing into your system.

Automatic unitizing and palletizing



Alvey Conveyor Mfg. Co.

IF YOU STACK AND MOVE more than 12 cartons, or 4 heavy bags a minute, an automatic palletizer might save you money. That's on a single shift basis. Savings are very certain if you operate on 2 shifts or more. One installation we know of palletizes only 4 *cartons* a minute. Yet it saved the machine's cost in a year running 3 shifts a day, 7 days a week—unattended.

Palletizers and unitizers will handle any object that's uniform in shape and stackable manually. They handle cartons, bags, kegs, barrels, boxes whether heavy or light. Package sizes and types range widely from 100-lb. bags of bulk material down to the countless number of drug, food, and cosmetic cartons that could be placed two abreast on this page.

Pallet loads may consist of as few as 15 packages formed on a postage stamp pallet only 2 or 3 feet square, or there might be more than 200 containers stacked 7 feet high on a pallet 4 feet square. The machines will automatically adjust to different sizes, shapes, and stacking patterns provided only that you segregate and gather pallet-load lots on holding conveyors. Unitizers are the same as palletizers but use no pallets, instead set up tiered loads for clamp trucks or deposit them on skids.

Why Buy a Palletizer?

Simply stated: Palletizers relieve men of tedious, back-breaking, boring jobs. Palletizers operate unattended, don't require rest periods or fringe benefits, are never absent, sick, or tardy. Loads from a palletizer are more uniform, tighter packed, better looking, ready for warehouse or shipping with or without a pallet. Palletizers are naturals for neatly piling heavy bags into easy-to-handle unit loads.

Smaller companies find palletizers help to hold down operating costs at a level comparable to larger companies. For large plants, palletizers break bottlenecks at production line ends where jams multiply costs fast.

What About Cost?

Savings may start at a few cartons a minute even on a 1-shift basis. They are more than a promise if you run on overtime, or more than a single shift. Many businesses report that an ordinary laborer costs $7,000 a year. This may seem high, and it may be in some places. But $5,000 a year isn't excessive if you include fringe and unemployment benefits, administrative, training, and labor turnover costs.

If cartons or boxes weigh anything at all, it takes 2 men, at least, to stack 12 to 15 a minute in a pattern on pallets. Usually a machine or a conveyor sets the pace for the men, they cannot stop. If they do, the line jams up, so there must be a relief man. Large bags are much slower and harder to pile than boxes. Any volume of bags means a crew to handle them at a rock-bottom cost of $5,000 a year for each man.

Good manual labor is hard to hire, harder still to keep. What does it cost when a man doesn't show up for work, or is on light duty because he hurt himself lifting? All of these costs compared to the cost of an automatic palletizer usually add up to mean that you can pay one off in 2 to 3 years.

Users experience shows that maintenance on palletizers is low, that life is long. They are very dependable. No special skills are required of maintenance men.

What Can Palletizers Do?

Palletizers are fast, steady, gentle with fragile merchandise. They stack any interlocked pattern or pillar stack. Pillar stacks may be taped automatically around the top layer for greater stability. Fork trucks carry away full loads, and place empty pallets, a number at a time, into a magazine that feeds the palletizer. Pallets may be of wood or disposable paper and of any reasonable size.

Speed depends on size, shape, and weight of the article, the pattern and number of layers in the load. If several packing lines feed more than one carton size through a palletizer (it will automatically adjust to fit them), palletizing speed will vary. A good day-in-day-out figure is 40 cartons or 20 heavy bags a minute. Frequently 60 packages a minute are practical. This means one loader may handle the entire output from a dozen production lines on an alternating basis. All it takes is a conveyor for each product, long enough to collect a full pallet load. Design and layout of a system isn't difficult, savings are often substantial.

Handling Heavy Bags

Piling 100-lb. bags is man-killing work. It takes a large crew, considering the number of tons moved. Machines stack bags effortlessly and tirelessly. Temperature, dust, fatigue don't hinder them. Unitizers arrange bags so that the heavy ends stabilize a pile rather than make it loose and sloppy.

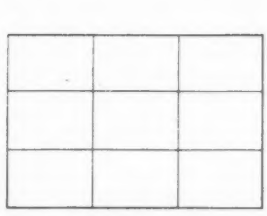
Many products shipped in bags tend to make the filled bag slightly pear-shaped. The stuff bulges the bottoms during filling. Bags like that have to be flattened by a squeeze belt or a vibrator so they will lie flat. If flattening doesn't work (sugar, for instance, won't flow over itself once it's in the bag), the bags must be rotated so that the heavy ends fall to the outside of pinwheel piles. Some bags are turned end for end, or left or right, then stacked compactly. This trick is hard to teach to laborers. It takes their time when they are piling. The trick is built into machines.

Palletizer users report keen acceptance of machine stacked piles and loads. Piles are neater and uniform, have high sales appeal. They look better, they ship better, there is far less damage because they handle easier.

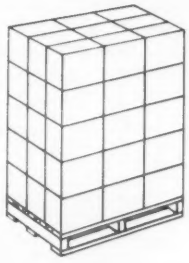
Glued loads and disposable pallets are increasingly popular. They cost less. Palletizers make them possible. The machines apply special glue in just the right amount as they build interlocked stacks on throw-away pallets. The glue has high shear strength that resists sideslip of the bags. It hasn't much tensile strength, bags lift off a pile readily. The method is inexpensive, takes no time, needs no strapping or tying to keep loads in place.

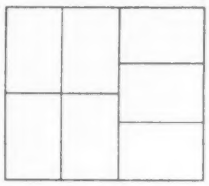
Automatic palletizing equipment is an important aid to production. Consider its application in your plant, the palletizer manufacturer is ready to help you in making an analysis of your needs. ♦

Pallet Patterns

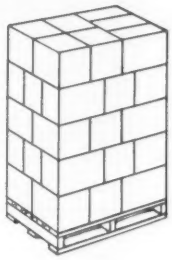


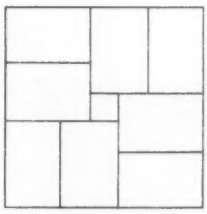
NINE CASE PATTERN
COLUMN PILE



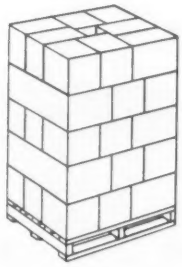


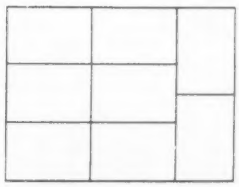
SEVEN CASE PATTERN
TIERS INTERLOCK



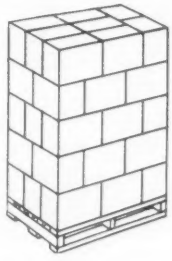


EIGHT CASE PATTERN
PIN WHEEL PATTERN
TIERS INTERLOCK

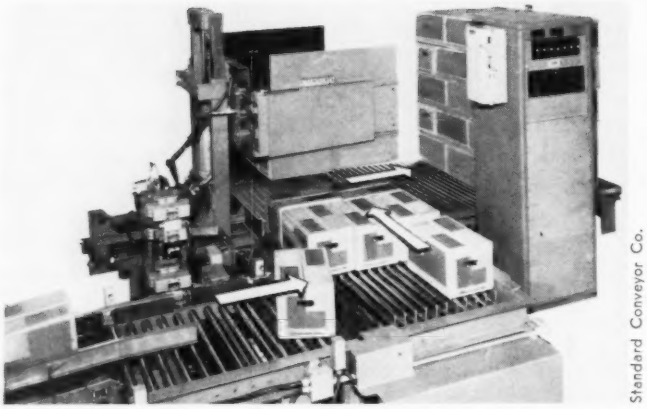




EIGHT CASE PATTERN
TIERS INTERLOCK

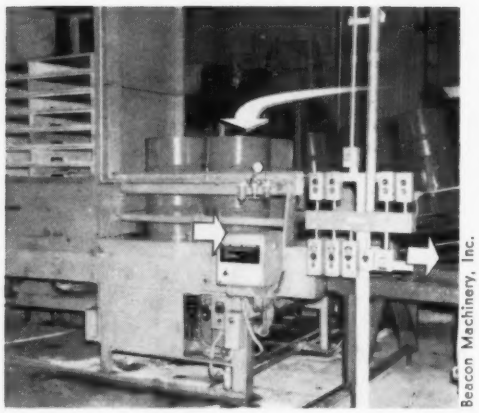


Automatic pallet loading



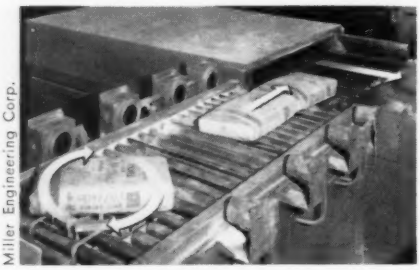
Standard Conveyor Co.

CLAMPING UNITIZER stacks cases with or without pallets, can handle 1,800-lb. loads at 35 cases per minute. It works at floor level, makes column or interlocking patterns. Clamp squeeze adjusts itself as load builds.



Beacon Machinery, Inc.

DRUM PALLETIZER automatically loads four filled drums onto a pallet, needs no operator. Loaded pallets leave the machine ready for transport by fork truck.



Miller Engineering Corp.

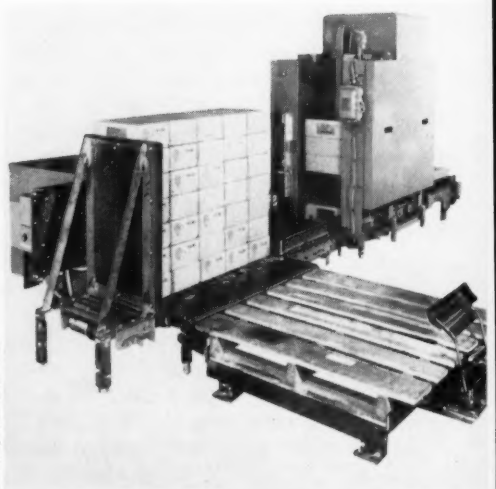
Larrison Corp.

BAG LOADERS, giant-sized or regular, do a job you can't afford to hire a crew for. Above, a way to turn bags to make pinwheel patterns. Right, a 4,200-lb. load on a 60 x 44-inch pallet.

Engineered Handling Systems

SUCTION HEAD picks up a complete tier of filled bottle cases, then deposits them on layer previously set on pallet. Method is gentle, speedy, may be used with boxes and cartons.

SIMPLIFIED loader sets on top of floor, makes column stacks that may be taped by attachment (not shown). Cartons pile atop each other, roll out on conveyor, get pushed on pallet when row gathers.



Lathrop-Paulson Co.

–is it for you?

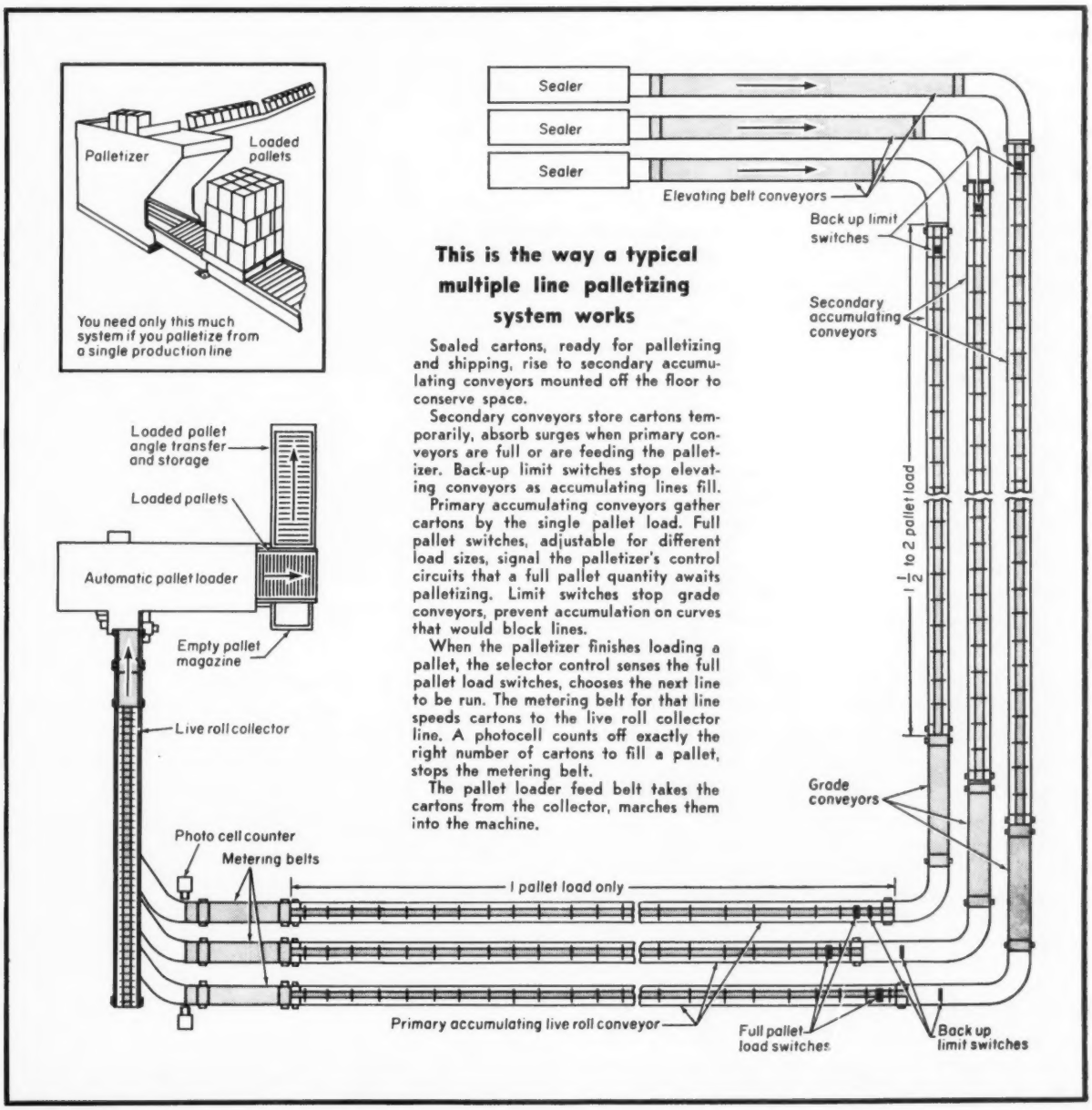
JUSTIFYING AN AUTOMATIC PALLETIZER for a single product line is easy. Think of putting the machine where the men work. The men cost so much, the machine costs so much. You buy it or you don't.

But if several products are to take turns through a high-speed palletizer, it's another story. You have to have accumulating conveyors and room for them. The system costs more, may well be worth it; but cost figures to justify it are harder to come by.

By using the diagram on this page, you can determine the cost factors for automatic palletizing.

The diagram shows several carton sealers feeding a palletizer. The plan follows recommended conveyor practice. The conveyors may run overhead, out of the way.

Accumulator line lengths depend on carton lengths.



This is the way a typical multiple line palletizing system works

Sealed cartons, ready for palletizing and shipping, rise to secondary accumulating conveyors mounted off the floor to conserve space.

Secondary conveyors store cartons temporarily, absorb surges when primary conveyors are full or are feeding the palletizer. Back-up limit switches stop elevating conveyors as accumulating lines fill.

Primary accumulating conveyors gather cartons by the single pallet load. Full pallet switches, adjustable for different load sizes, signal the palletizer's control circuits that a full pallet quantity awaits palletizing. Limit switches stop grade conveyors, prevent accumulation on curves that would block lines.

When the palletizer finishes loading a pallet, the selector control senses the full pallet load switches, chooses the next line to be run. The metering belt for that line speeds cartons to the live roll collector line. A photocell counts off exactly the right number of cartons to fill a pallet, stops the metering belt.

The pallet loader feed belt takes the cartons from the collector, marches them into the machine.

TABLE 1 — DETERMINING CONVEYOR LENGTHS

Product	Case Sizes In Inches			Cases		No. of Tiers	Max. Conveyor Length in Feet	
	Length* L (1)	Width W (2)	Height H (3)	Per Pallet (4)	Per Tier (5)	(6)	Primary nL/12 (7)	Secondary 1.5 to 2 (nL/12) (8)
1	18	11⅝	8½	40	8	5	60	90-120
2	15	11⅛	10¼	48	12	4	60	90-120
3	18	11½	10⅛	40	10	4	60	90-120
4	15	12	11¼	36	12	3	45	68-90
5	17	9⅛	11	36	12	3	52	77-104
6	10	9⅝	14⅞	32	16	2	27	40-54
7	13	8⅜	7⅛	80	16	5	86	130-175

*Round all fractions to next higher full inch.

You need a separate line for each different product or each carton size produced at any one time. The same conveyors can run different things at different times as production changes. Average installations have three or four conveyors.

Figuring Line Lengths

Recommended: Primary conveyors should hold one pallet load, secondary conveyors from one and one-half to two pallet loads. To find out how long accumulators should be for your products, lay out a table with headings like those in table 1. Fill your table with the vital statistics of your packages. Even though right now you're interested only in case lengths, list all dimensions and stacking data. They'll come in handy later when you analyze pallet patterns and conveyor capacities.

As the example in the table shows, you find the numbers in column (7) by multiplying the numbers in column (1) by the numbers in column (4) then dividing by 12. You determine secondary conveyor lengths by multiplying the numbers from column (7) by 1½ and by 2.

Inspection of the example shows that:

- Primary accumulators must be at least 60 ft. long.
- One of them must be 86 ft. long to accommodate product 7.
- Secondary conveyors should run 90 to 120 ft. long.
- One secondary conveyor has to be 130 to 175 ft. long, possibly less.

Secondary conveyors need not be straight. They may be oval spirals running from floor to ceiling. (See how Western Electric did it: MHE, Oct. 1960, page 88.) Primary conveyors must be powered for instant response when the palletizer signals for a load. They shoot the cartons to the fast-moving metering belts, which space the cartons out and run them past a photocell counter into the palletizer. Metering belts are about 10 feet long.

To determine the maximum production load on the palletizing equipment that is, (balance the line), assume that products 1, 2, and 3 are running simultaneously, as on Chart 2.

TABLE 2—DETERMINING PALLET LOADING SPEED

Product	Cases		
	per 8 hr.	per min.	per pallet
1	4500	9.2	40
2	5800	12.8	48
3	3500	7.9	40
Total		29.9	43 (avg)

Add the total number of cases per minute offered to the palletizer by the three lines to obtain your line balance number (29.9). Determine the average number of cases per pallet from the three conveyors (43). To find the time needed to produce a pallet load out of the palletizer, divide the number of cases per pallet by the line balance number.

At 29.9 cases per minute, the pallet loader in the example is in balance with the line. It will turn out a load every 1.44 minutes, on the average. If the loader is set at a speed of 35 to 40 cases a minute, it's loaded at 75 to 85 percent of maximum capacity.

Power and upkeep costs

Average cost of power and compressed air for automatic loader operation runs from 16 to 18 cents an hour. Maintenance and repair compare with any automatic equipment. No special training is required of maintenance men, although they should have working knowledge of electric relays, controls, and circuits.

Aside from a fork truck operator, you may need a pallet loader operator to oversee the system. Frequently, the fork truck man suffices.

What you now know:

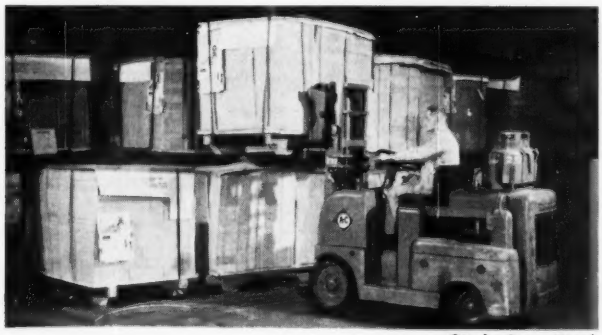
1. How big a system you'll need
2. Whether you have room for it
3. What it will do for you

In short you have a basis for talking costs and the start of your proposal to management. ♦

This Allis-Chalmers FT-20 "passes" the cereal from warehouse to freight car. Enough cereal is loaded out every day to make up an entire freight train filled with Kellogg products.

Coming up—24 cases of Kellogg's Variety Packages. They are moved into storage by an Allis-Chalmers 2,000-lb lift truck. Operator Bill Bender was assigned to the original demonstrator and liked it right from the start.

Here a 6,000-lb Allis-Chalmers lift truck moves skids of printed flat cartons of paper for cereal packages into processing. Operator James Smyth likes the unit's smoothness, its visibility and above all, its speed. "The other day I loaded 15 boxcars and five semi-trailers with this truck in one shift," said Smyth.



They "pass the cereal" with Allis-Chalmers Lift Trucks at *Kellogg's*

Passing the cereal is serious business at the Kellogg Company plant in Battle Creek, Michigan. It has to be, for how can one take 728 million pounds of corn lightly . . . or 130 million pounds of rice . . . or 90 million pounds of bran? Yet these are just a few of the raw materials that are processed into cereal yearly and then shipped round the world.

Choosing lift trucks to handle this volume is also serious business. A demonstration showed that an Allis-Chalmers lift truck was apparently what both the company and the operators wanted.

Result: Kellogg now uses 21 Allis-Chalmers lift trucks — many of them around the clock — handling receiving, warehouse, and shipping operations . . . proving every day that there *is* a dollar-saving difference in lift trucks.

Let your Allis-Chalmers dealer show you why these lift trucks can also make a dollar-saving difference in your plant. Allis-Chalmers, Milwaukee 1, Wisconsin. BH-154

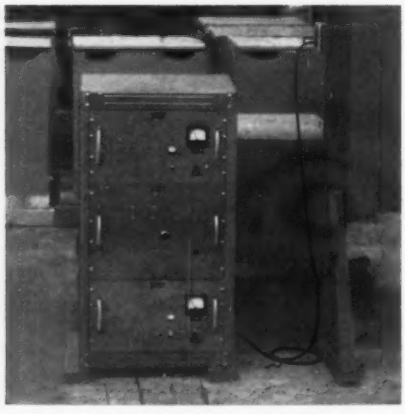
ALLIS-CHALMERS

POWER **FOR A GROWING WORLD**

Circle 3 on Reader Service Card

Tractors answer electronic roll-call

TRAIN HAS COME from the packaging department with goods for stock, will be reloaded with outgoing orders picked from stock. Path for trains is determined by wires set in grooves in the floor. Fork trucks stay in one area, do no transporting. They only load and unload trailers, lift materials in stockrooms.



THIS IS THE CONTROL SYSTEM for the 6,000 ft. guide path. The four lines beneath the box are wires carrying signals the tractors follow. Tractors return at the close of day for battery charge no matter where they are when the whistle blows.

THE MAN TURNED A SWITCH, and shortly every tow tractor in the vast warehouse lined up before us. They awaited their nightly battery charge to ready them for the next day's work. It was eerie because they were driverless.

He told me that in the morning they'd return, automatically, to the job each was doing at quitting time the night before.

We were studying the Guide-O-Matic system at Oldsmobile's new Central Parts Depot, Lansing, Michigan, where workers dispatch the tractor trains they load. The battery-driven tractors need no drivers, they're guided by closed-circuit radio signals from wires set in the floor.

You dial a department number, push a button on the tractor, then step away. The train automatically goes by the shortest route as it follows the signals like a hound follows a scent. The system speeds parts to Olds dealers and warehouses for fast customer service. An order leaves the 750,000 sq. ft. depot within a day

Fork trucks do all the lifting, never leave assigned areas except for maintenance. Trains do all the hauling. When a train arrives at a station, the tractor is immediately uncoupled, goes back into traffic. Usually there's another tow ready for it.

A tractor pulls 6 tons total on 4 trailers, moves 2½ mph. Battery charges last more than 10 hours. A master switch calls the tractors at day's end to the recharging station, sends them back to the jobs they were doing the next day.

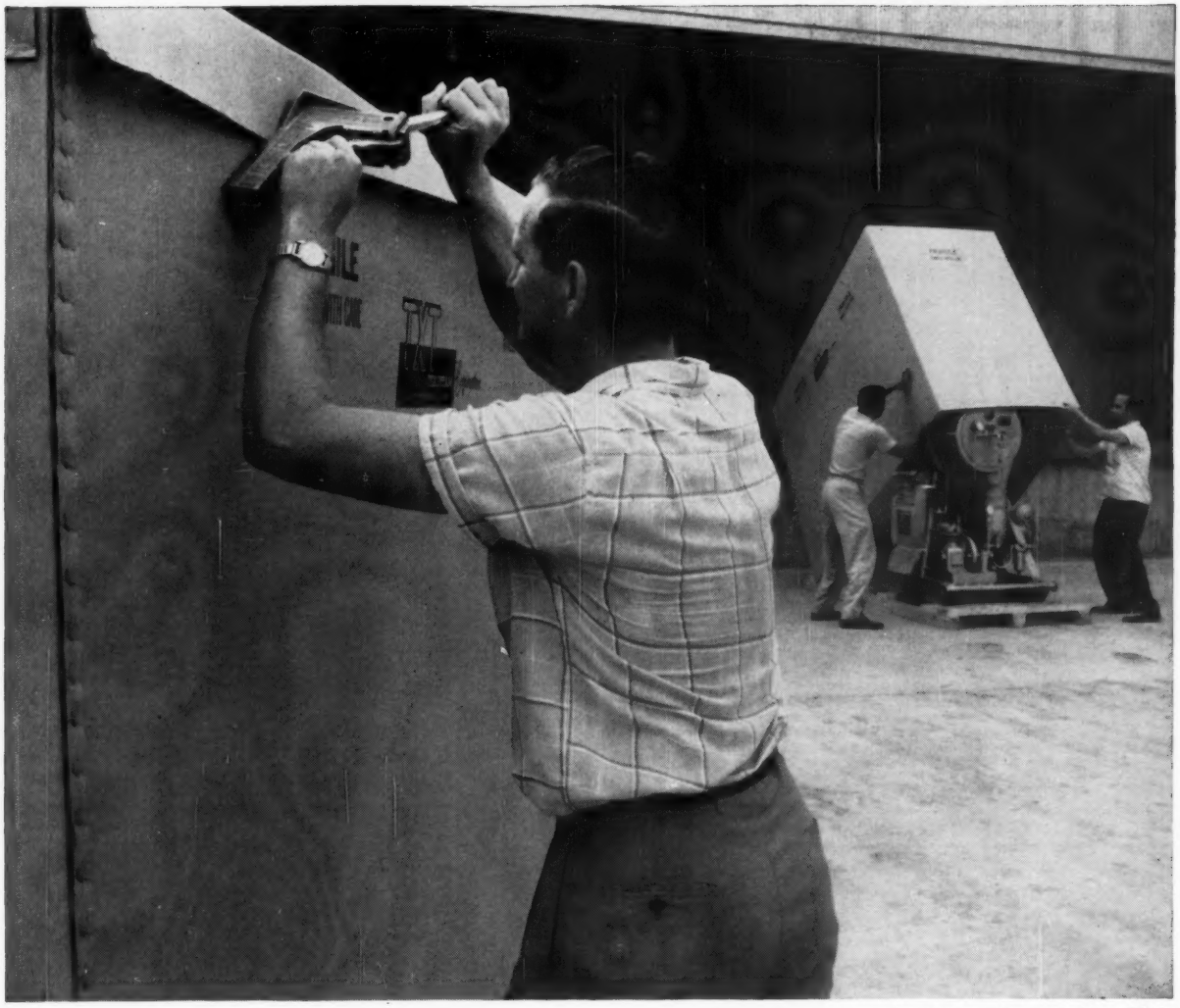
Goods come to the depot in bulk. Fork trucks unload them to trailers sent to the packaging department. Items are packed into single unit cartons, put back on trains, sent to stock.

Stock pickers, each with a cart, work in assigned areas. Filled carts are taken to loading points where goods are placed by fork trucks onto trains. Each order has its own trailer. Trains are dispatched to the dock, go automatically over the scales first.

All loads shipped to dealers must be weighed for freight charges. Tractors stop with the first trailer on the scale platform, then with each trailer thereafter.

The system chooses first the most direct route to a destination, an alternate route if the direct one is blocked by another train. Block controls like those on railroads never allow a train to enter another's block. Tractors stop on contact with anything in their path. They shift to manual control quickly when necessary.

The are 27 stops in the present Olds setup, could be 50. The guide path is 6,000 ft. long. ♦



Container manufactured by Owens-Illinois

For ton-and-a-half oil heaters—

Giant Bostitch-stapled carton slashes packing costs 50%

Texsteam Corporation, Houston, Texas, used to ship 3000-pound oil heaters in wood crates. Each crate was built around a heater and was the size of a small room . . . seven feet long, seven feet high and three feet wide. Crates were costly to make and to ship. They were heavy, time-consuming to build and hard to handle. Here's how Bostitch helped.

An unusual—and unusually large—corrugated container proved to be ideal. It's a sleeve with a Bostitch-stapled seam. A cap, stapled in place, forms the top. The burner is bolted on a wood pallet, then sleeve and cap go over the burner. A heater can be packed in a fraction of the time.

Texsteam reports savings of 50% for the new container over the old. The new carton weighs less and has cut freight costs substantially. Shipments have been completely damage-free.

Texsteam gained many advantages and worthwhile savings in the change to Bostitch-stapled containers. Many companies do. If you would like to know how a change might benefit you, talk to a Bostitch Economy man. To call him, look under "Bostitch" in your phone book. Or write us direct. See how much you can save when you use Bostitch in your shipping room.

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With every Bostitch machine you get...
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Circle 110 on Reader Service Card

How

. . . SAND

OTTAWA SILICA CO., OTTAWA, ILL. recently installed a conveying system to carry bags of sand all the way from the packing machines to the stacking point inside box cars or trucks. The result, says Ottawa, is quicker and better service to customers.

If the racks have to be palletized, it's done inside the box car or truck. There is no warehousing.

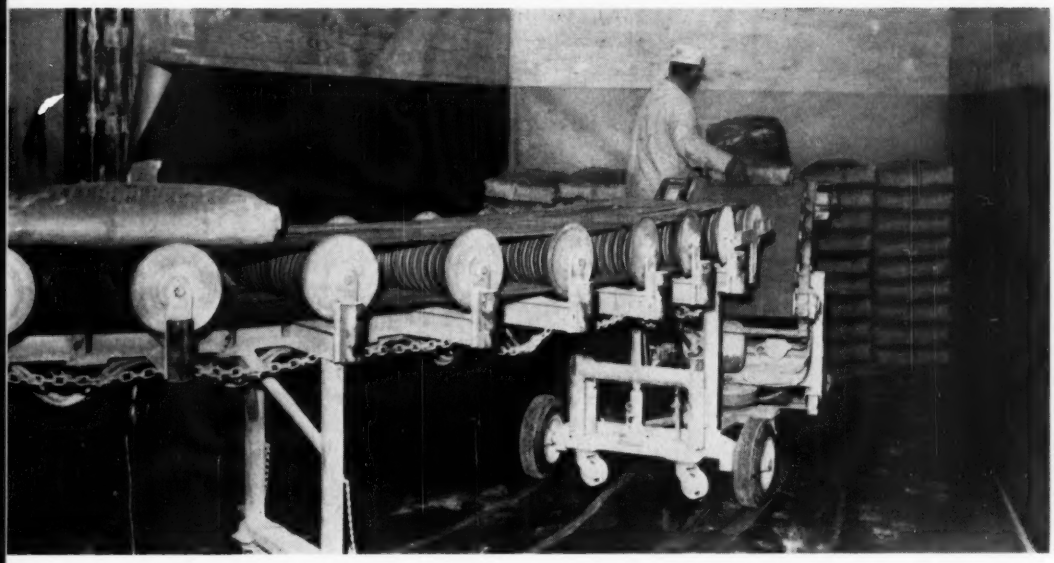
Valve type packing machines are used on the second level of the packhouse. They fill the bags, then discharge them to the first section of the conveying system. The conveying surface is a series of endless spring wire belts that operate over grooved rollers. This open construction allows any loose sand (which is highly abrasive) to fall through the spring belts. It can be reclaimed. The section of conveyor beneath the packing machines is reversible. The packers can route bags to either side of the packhouse for delivery to any one of several box car spots or to the truck loading dock.

After going across the packer conveyor, the bags are lowered to a dock. The dock is between two conveying surfaces at an angle of 60 degrees. This controls speed, and flattens them to give tighter loading and palletizing. The bags are then transferred to a flexible box car and truck loader that moves in and out under power and conveys the bags right up to the point of stacking or palletizing. There a high-speed belt at the end of the loader. It can be swung in an arc. It moves up and down under power with push button controls. The operator merely guides the bag into place. No heavy lifting is needed.

For palletizing: the box car is prepared by lining wooden pallets along the car walls. They're placed on the floor as loading progresses. Glue is applied to the bags to keep them from shifting.The only manpower required is the packing machine operator and two other men who work in the box car. One is at the end of the stacker, the other handles the wooden pallets and applies glue. The company is considering a glueing device that fits on the end of the conveyor and automatically applies the glue.

Ottawa points to three money-saving features of its conveyor system. It has eliminated the need for warehousing space, fork trucks, and a large inventory of pallets.

they're handling . . .



Power-Curve Conveyor Co.

The Elwell-Parker Electric Co.

. . . COTTON BALES

THEY'RE USING ELECTRIC POWERED fork trucks to handle cotton bales at Memphis Compress and Storage Co. Memphis reports important savings from using the specially designed trucks.

Memphis says the electrics measure up well in work output, dependability, and maintenance.

One of the difficulties in using electric powered trucks was the extra heavy current draws imposed by the severe work cycle.

The narrow aisle and car loading space required a truck as small as possible. This placed a premium on battery compartment space. The answer: a highly efficient battery (high output to size ratio). And the truck manufacturer substantially increased the efficiency of the motors and hydraulic equipment, reducing current draw. Result: a 36-volt, 936-1,080 ampere-hour battery provides current for 8-hours work.

At the end of the day, the drivers take their trucks to a central charging area. There, automatic equipment charges the batteries.

The electrics used at Memphis are rated for a maximum of 1,500 lb. with a boom or 2,400 lb. with a 3-bale clamp. They lift 10′ 6″ with a telescoping upright assembly, which is 6′ 11″ high fully collapsed. Overall truck length less the clamp is 6′ ¼″. Overall width is 3′ 4″.

The trucks are used on car loading and unloading, for handling bales around the compress, weighing and sampling, and for breaking out bales from stacks for reweighing or resampling. Clamps, hooks, booms, and other attachments are used without difficulty.

BULLETINS CATALOGS FILMS

Screw Conveyor Guide

Engineering guide to screw conveyors. Eighty-three pages on planning, components, layouts. Charts and drawings give data compactly. Typical screw conveyor uses illustrated. Has parts number and general indices. Guide, 150-p., 8½ x 11 in., free to those using or specifying screw conveyor equipment.

Thomas Conveyor Co.

Circle **401** on Reader Service Card

Adjustable Speed from AC

Eaton Dynaspede Drives, powered by AC motors, have quick, infinitely adjustable speed control. Bulletin DD-1 describes models rated 3 to 150 hp. Gives data on uses, torque, dimensions, installation. Compactness makes drives suitable for conveyors, hoists, etc.

Dynamatic Div., Eaton Mfg. Co.

Circle **402** on Reader Service Card

Protects Fragile Products

Sus-Rap packaging material lowers in-transit damage, shipping weight, package material and labor costs, shipping space, packing time, according to 4-p. bulletin. Used to pack plate glass, windshields, instruments, motors. Maker offers package development assistance.

Vanant Company, Inc.

Circle **403** on Reader Service Card

Row Transfer Pallet Loader

Drawing show row-by-row method by which 100-RS Pallet Loader operates. Loads up to 33 units a minute. For cartons, beverage cases, multi-wall bags. Folder includes specifications, plan and side view elevations.

Engineered Handling Systems

Circle **404** on Reader Service Card

For Computer Specialists

Computer experts must have comprehensive understanding of four essentials: (1) the origin of a problem to be solved; (2) mathematics to be applied to it; (3) techniques of analog computation; (4) operation of computer components. These, as well as programming and troubleshooting, are covered in detail in the comprehensive work, "Analogue Computation" by Stanley Fifer. (McGraw-Hill. 4 volumes, 1370 pages. $39.50).

Hand Truck Catalog

All 2-wheel and platform hand trucks of Fairbanks line included in Catalog T-40. Gives picture, description, specification of each item. Also chart of recommended load ratings based on what average operator can handle.

The Fairbanks Company

Circle **405** on Reader Service Card

Heavy Duty Bench Scales

Scales in capacities of 50-, 100-, 200-, and 300-lb., for heavy duty industrial use described in Bulletin 3415 from Exact Weight. Overload and bumper springs are standard, accessories available are parcel post dial charts, wheeled floor stands, tare subtractor.

Exact Weight Scale Co.

Circle **406** on Reader Service Card

Book Tells How To Manage Warehouses

If you want a "how to" manual on warehouse management, try Andrew J. Briggs' "Warehouse Operations, Planning, and Management," (John Wiley & Sons, 304 pages, $8.50). It covers planning, layout, equipment, systems, controls, and operating procedure. Gives details on how to make surveys required prior to planning a new warehouse or modernizing an old one. Includes illustrations of forms, charts, and reports used in planning and operation. The authority of the book and soundness of the ideas it presents come from Mr. Briggs' wide experience with government and private industry warehousing problems.

Case Imprinted Any Or All Sides

Data sheet 100-59 contains information on the Packomatic Case Imprinter. It prints brand name, case contents, deal or lot numbers, serial number of other identification on shipping cases automatically as part of in-line product. It imprints any or all four case side and end panels.

J. L. Ferguson Co.

Circle **407** on Reader Service Card

High-Lift Container Dumper

Dumping Device GRD 304-F-2 is for high (10 ft.) dumping of Dempster-Dumpster Containers into large trailers, volume packer trucks, railroad gondolas. Driver controls from cab, without helper. Handles tilt or drop-bottom containers. Booklet shows applications, mechanical construction, accessories.

Dempster Brothers

Circle **408** on Reader Service Card

Trolley Busways

Forty-page bulletin tells all about tracks, trolleys, and accessories for trolley busway electrification. Information

Continued on page 91

Material Handling Engineering

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READER SERVICE CARD

Material Handling Engineering

BULLETINS CATALOGS FILMS

on planning, method of mounting, typical installations. Includes new heavy duty equipment rated at 60 amps. continuous service, 90 amps intermittent.

Feedrail Corporation

Circle **409** on Reader Service Card

New HP. Ratings for Roller Chain

New hp. ratings are a feature of Catalog 760 describing Diamond stock roller chain, sprockets, and flexible couplings. Ratings, based on industry research, are higher, allowing new uses of chain. Catalog also includes new miniature roller chain, new heavy duty and plate conveyor chain.

Diamond Chain Co.

Circle **410** on Reader Service Card

Screw Jack Engineering Data

Technical data on 2-, 5-, and 15-ton capacity screw jacks, for positioning machines, given by Bulletin 4421J. Tables show ratio of work and nut revolutions to screw travel, screw length and column load compared to allowable side load, torque/hp. requirements.

Joyce-Cridland Co.

Circle **411** on Reader Service Card

Portable, Nestable Bins

Kaiser Nest-A-Bin shipping containers consist of 3 components that combine to make 7 sizes of bins – 220, 330, 440, 550 gal. and 54 & 70 cu. ft. Used for shipping liquids, granular solids, pastes. Reusable, aluminum units nest for return shipment. Dimensions, capacities, how to use described in 8-p. booklet.

Kaiser Aircraft & Electronics Div.

Circle **412** on Reader Service Card

Detects Level of Flour in Bins

Level-Tek eliminates hand-gaging of flour bins, reports whether bin is full, partly full, or empty. Also controls input conveyor, shuts it down and rings bell when bin is full. Bulletin L-102 presents these features as case history, with system diagram.

Robertshaw-Fulton Controls Co.

Circle **413** on Reader Service Card

DC Power Supplies

Christie DC Power Supplies furnish voltages up to 135 v., capacities from 15 to 1500 amps. Bulletin AC-60-1 describes uses for production testing, laboratory work, other applications requiring power conversion.

Christie Electric Corp.

Circle **414** on Reader Service Card

Casters & Wheels

Divine Catalog 26 covers full line of casters and wheels, gives dimensional and load information. Rating charts show kind of floor to which caster or wheel is suited.

Divine Brothers Co.

Circle **415** on Reader Service Card

Pressure-Sensing Conveyor

Adjustable-pressure conveyor handles round and odd-shaped objects, fragile packages, stacked packages, even an anglefood cake, without crushing or squeezing load off to the side. Makes overhead installations safe. Specifications, pictures, in 8-p. booklet.

The Rapids-Standard Co., Inc.

Circle **416** on Reader Service Card

Uniform Dribble Stream

Bulletin 59-4 describes the Dribble Reserve Top Hopper. This mechanical device insures accurate grain weighing by providing an absolutely uniform dribble stream. It's furnished with Richardson's 6-bushel and 10-bushel JJ Grain Shipping and Receiving Scales.

Richardson Scale Co.

Circle **417** on Reader Service Card

Advanced Ideas on Distribution, Material Handling Methods

For a report of latest developments and ideas in the field of material control, read "Management of the Physical-Distribution Function," (AMA Management Report No. 49. American Management Assn. 200 pages. $5.25, or $3 to AMA members). Consists of papers presented at AMA conferences on distribution held in 1959 and 1960. Covers views of 22 experts on principles applying to physical distribution, role of common carriers, progress of containerization, physical distribution management organization in 6 companies, and developments in the field likely to occur by 1965. Articles of especial interest on: distribution costs and their control; DuPont experience with containerization; function of chief distribution executive.

Scissor Lifts And Lift Tables

An 8-page bulletin covers the company's line of American Hydraulic Scissor Lifts and Pantograph Lift Tables. New models recently introduced are described, as well as standard units in the single arm, double arm, and open base series. Lifts are now available in capacity ranges from 1,000 to 24,000 lb with travels of 24 to 60 inches. Optional equipment is available for varied applications.

The American Mfg. Co., Inc.

Circle **418** on Reader Service Card

Automatic Cartoning Equipment

Latest equipment is described. Portable, and simple to operate, the cartoning equipment increases output while reducing labor costs. It uses a minimum of valuable floor space. Among products described is the Bivans Tuck-O-Mat, designed for long or short runs. It requires the part-time attention of only one person while forming 4,000 cartons an hour.

Bivans Corp.

Circle **419** on Reader Service Card

Stainless Steel Floor Plate

Booklet 152 describes the safety and economy of stainless steel floor plate. Applications. Includes "Safety Uniform Load" tables, types available, and specification tables. A good reference for anyone connected with installing and maintaining industrial flooring and safety equipment.

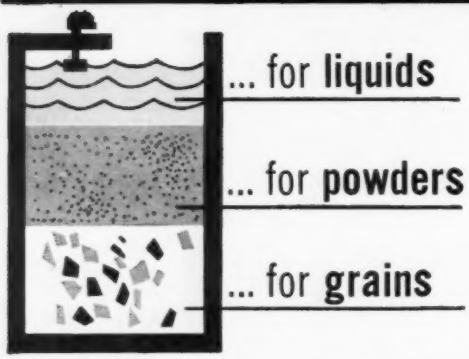
Eastern Stainless Steel Corp.

Circle **420** on Reader Service Card

Continued on page 92

Circle 121 on Reader Service Card

NOW! LOW-COST LEVEL CONTROL



... for liquids

... for powders

... for grains

Positive measurement and control of material levels can be obtained with low cost W & C Prob-A-Larms.* Prob-A-Larms, are standardized capacitance type probes available in several local and remote models; All Prob-A-Larms are fail-safe.

WRITE FOR FREE CATALOG. *Trademark

W&C Weighing & Controls
Division of
CompuDyne Corporation

BULLETINS CATALOGS FILMS

Electric Trucks In The Foundry Industry

An 8-page specialized industrial brochure. Highlighted are typical applications for electric trucks in foundries, including the handling of sand, core handling, quenching, in-process handling, handling of finished castings, scrap, and operations in storage and shipping.

Elwell-Parker Electric Co.

Circle 421 on Reader Service Card

Self-Dumping Hoppers

For low cost handling of wet or dry, hot or cold bulk materials. Bulletin 265 details Roura self-dumping hoppers, and tells how many industries have reduced bulk handling costs as much as 50%. If you handle scrap metal, small castings or forgings, cullet, soybean meal, scrap tile, paper trimmings, or aggregate, this bulletin will help.

Roura Iron Works, Inc.

Circle 422 on Reader Service Card

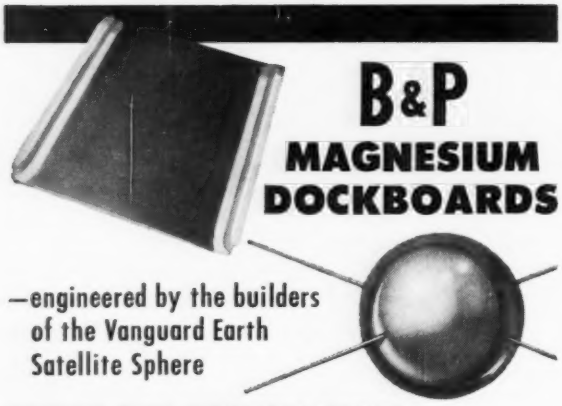
Pocket Radio Receiver

Bulletin ECR 747 details the Voice Director pocket radio message receiver. A dispatcher or secretary using regular two-way radio equipment can transmit voice directions to personnel equipped with the receiver unit.

Communication Products Dept.
General Electric Co.

Circle 423 on Reader Service Card

Continued on page 94



B&P MAGNESIUM DOCKBOARDS

—engineered by the builders of the Vanguard Earth Satellite Sphere

COMPARE THESE IMPORTANT FEATURES:

- √ Exclusive, rugged forged ends on one-piece curb
- √ Full length hand grip for safe handling from any position
- √ Yellow lane markings on *all* boards
- √ Heat treatment after welding for longer life

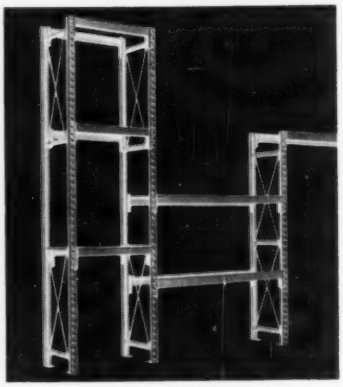
Compare *all* the B & P features! Write today for the fact-packed B & P Dockboard folder.

60-MM-5

BROOKS & PERKINS, Inc.
1938 WEST FORT STREET • DETROIT 16, MICHIGAN

AMERICA'S LARGEST MANUFACTURER OF MAGNESIUM ASSEMBLIES

Circle 18 on Reader Service Card



Best buy in the industry – Meet the PALMER-SHILE series 75

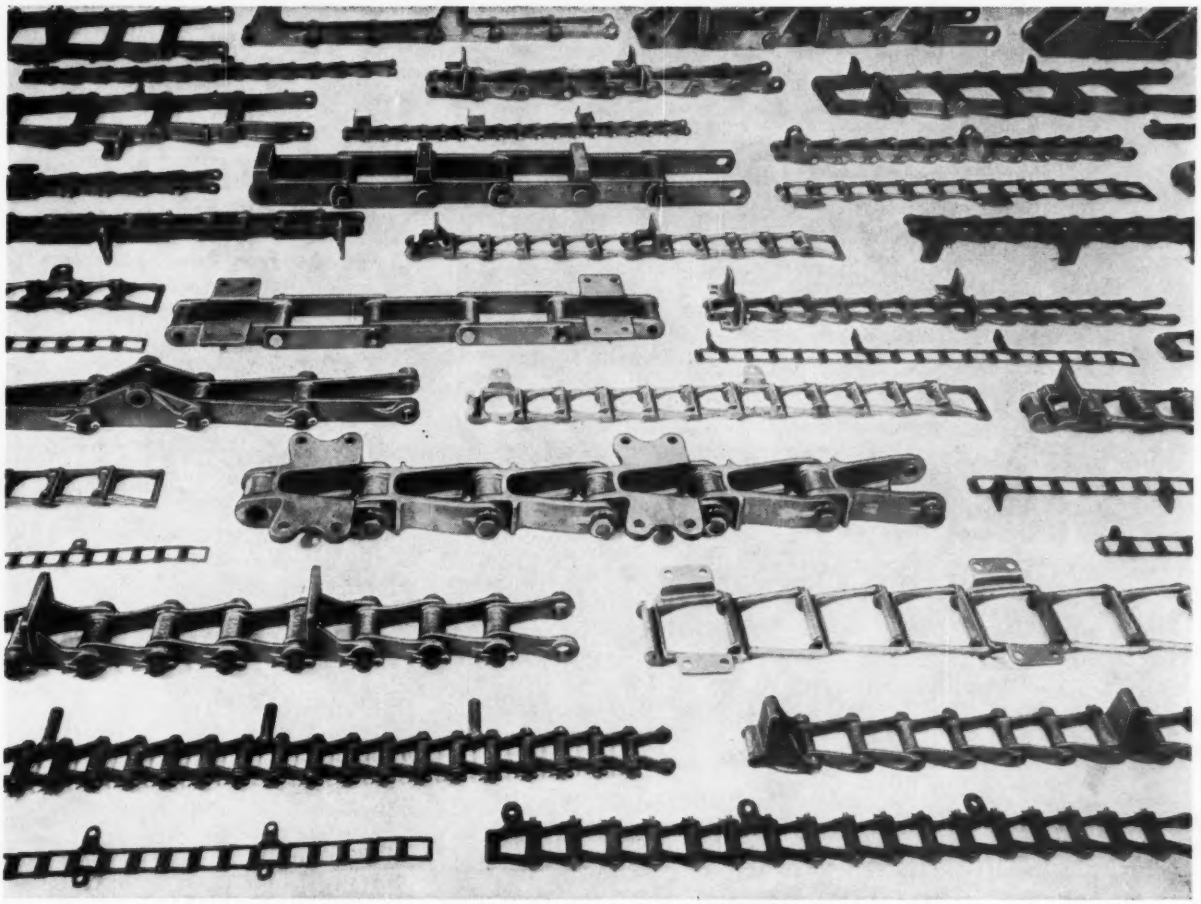
The combination of strength, adaptability and cost that you'll find in the Palmer-Shile "Series 75" makes this new and highly versatile storage rack today's best buy in the materials handling industry. **CONSIDER STRENGTH:** There's no metal removal in the construction of uprights for "Series 75." **CONSIDER ADJUSTABILITY:** "Series 75" adjusts on 3" centers from top to bottom without loss of adjustability at bracing points. **CONSIDER PRICE:** This custom rack system with its unique strength, its total adjustability—is priced competitively or under less perfect racks. Write today for the full story on "Series 75."

PLUS "SAFETY WHITE"
An innovation in the storage system industry is Palmer-Shile's Safety White!

PS PALMER-SHILE
SERVING THE MATERIALS HANDLING NEEDS OF THE NATION
16000 FULLERTON, DETROIT 27, MICHIGAN

Circle 93 on Reader Service Card

Chains change by your choice of attachments! *If you can't find it here...*



Moline can make it for you!

To help you visualize new applications for chains, here are a few of the hundreds of Moline chain and attachment combinations which are available. Each attachment creates a new conveyor device for material handling.

If you do not see just the right chain-attachment combination, Moline has completed a brand new "Designers' Handbook" which shows all types and sizes of chain and attachment combinations, complete with details on application and performance. They'll help you "spark" new ideas for your conveyor or process plant equipment. Write today for your copy.

If standard attachments are not available to meet the needs of your project application, Moline engineers will be glad to work with you on a special attachment. Write or phone for consultation and help on your problem. There's no obligation.

Specializing in the manufacture of chains

Moline authorized distributors are located in all industrial areas and principal cities.

Moline Chains

for conveying, elevating and power transmissions

MOLINE MALLEABLE IRON COMPANY

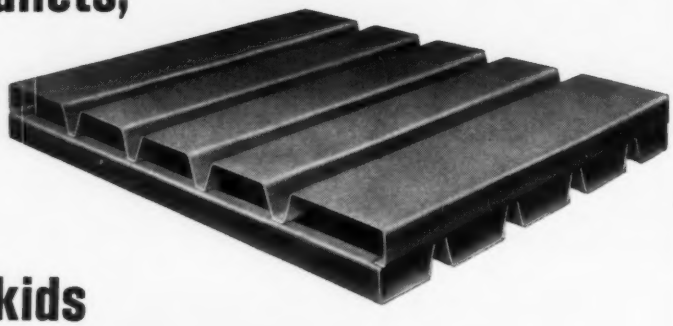
St. Charles, Illinois

Circle **75** on Reader Service Card

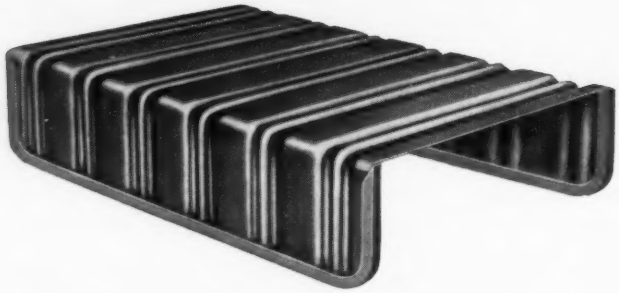
LOOK TO UNION METAL

for boxes,

pallets,



skids



Detailed information covering advantages, features and complete range of designs is readily available.

THE UNION METAL MANUFACTURING COMPANY
Canton 5, Ohio • Brampton, Ontario

UNION METAL
Material Handling Equipment

Circle **113** on Reader Service Card

BULLETINS CATALOGS FILMS

Pump Can't Leak

Pump for liquids works on diaphragm principle, has no stuffing box. Closed system ends leaks. Construction explained by diagrams, cross-section drawings in pamphlet "Profits Down the Drain." Handles corrosive materials. Meters accurately.

Lapp Insulator Co.

Circle **424** on Reader Service Card

Racks for Reel Storage

Bulletin 106 on A-frame racks to store reels of wire, cable, belting, etc. Features adjustable support brackets accommodating shafts up to 3 in. OD.

Bernard Gloekler North East Co.

Circle **425** on Reader Service Card

Monorails, Cranes

"Cost-Cutting with Monorail and Cranes" provides information for planning and equipment selection. Illustrations show use of monorails and cranes in leading industries. Fifty-two pages.

Louden Machinery Co.

Circle **426** on Reader Service Card

Portable Powered Conveyor

Booklet describes Ve-Be-Veyor, portable aluminum-frame belt conveyor powered by 110-v. motor. Works on inclines.

A-B Farquhar Div., Conveyor Systems, Inc.

Circle **427** on Reader Service Card

Lift Truck Leasing

Booklet explains 5 custom leasing plans offered by Hyster Co.

Hyster Co.

Circle **428** on Reader Service Card

Light-Weight Heavy-Duty Dockboards

Aluminum dockboard weighs only 50 lb., is 24 in. long, locks self in place and supports 5,000-lb. axle load, costs $49.75. Bulletin gives dimensions, capacity, weight, price for this and 6 other Jarke models in series.

Jarke Mfg. Co.

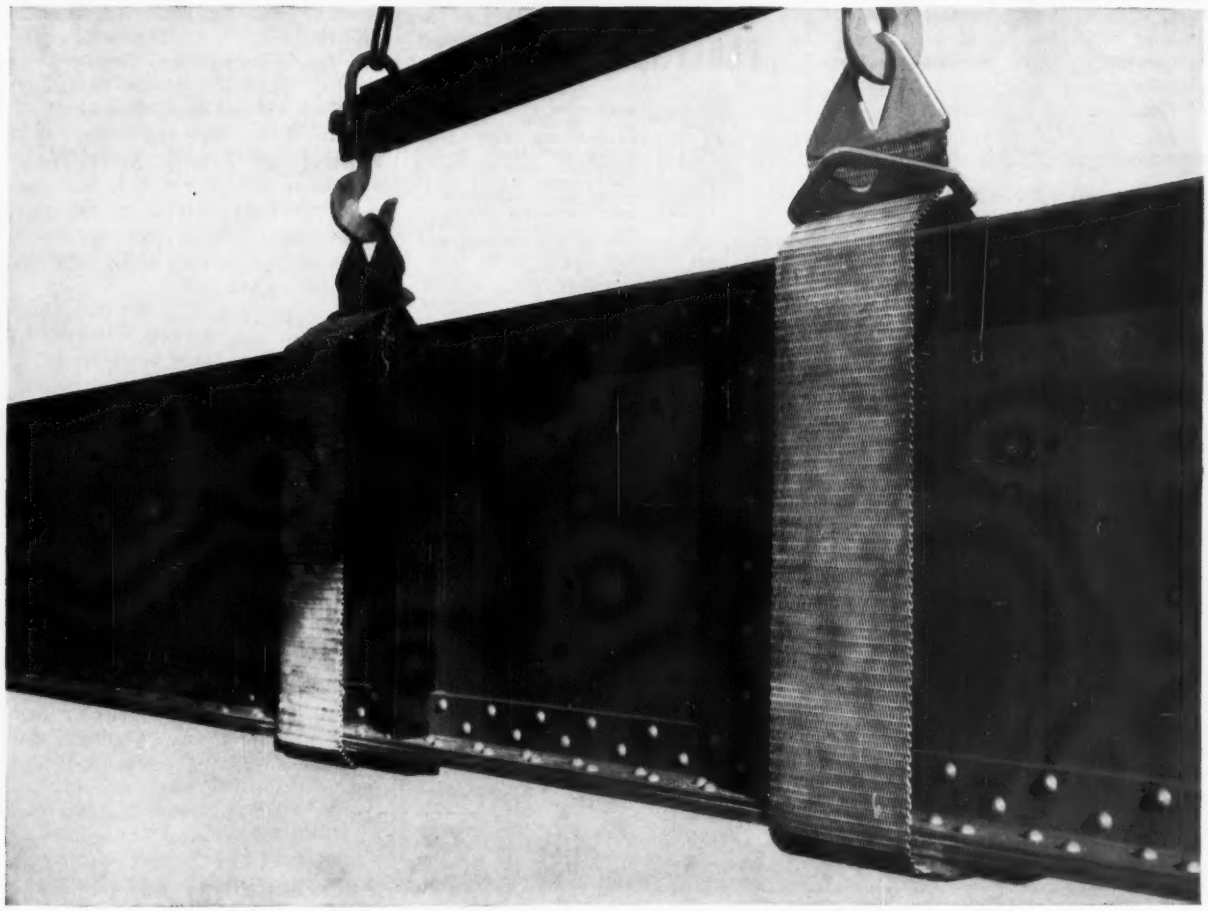
Circle **429** on Reader Service Card

Rotary Feeder

Model DA Feeder introduces powdered or granular materials into dense

Continued on page 76

STRENGTH



Only GRIPPER Metal Mesh SLINGS®

give you extra strength + 6 other benefits

Safety, Flexibility, Load Stability, Gentle Handling, Longer Life, Fast, Easy Rigging

These Gripper Slings are cradling a monster . . . 28,000 lbs. of steel beam, 100 feet long. Yet, the men working on this project have complete confidence in Gripper Slings. Individually tested, Gripper Slings have a 5 to 1 safety ratio built into them. And, the open, metal-mesh construction lets you quickly examine every inch of the sling body for a thorough safety inspection.

Pre-tested and guaranteed Gripper Slings are available in standard lengths and widths to handle loads up to 100,000 lbs. For handling delicate loads or polished stock, ask about our PVC plastic or Neoprene-covered Gripper Slings.

Mail the coupon today for full information or a demonstration. Or, contact your nearest representative.

The Cambridge Wire Cloth Co.

Dept. W, Cambridge 3, Md.

☐ Please send Gripper Sling catalog and my distributor's name.

☐ Please arrange a no-obligation demonstration.

NAME_____ TITLE_____

COMPANY_____

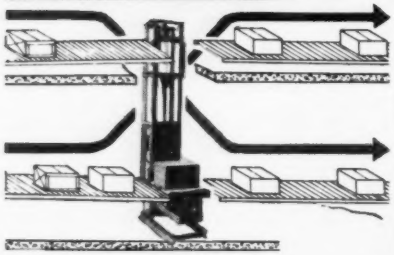
STREET_____

CITY_____ ZONE_____ STATE_____

Circle **22** on Reader Service Card

Circle 118 on Reader Service Card

DOUBLE your floor-to-floor Traffic with Weld-Bilt "Criss-Cross" Automatic Lift Unit



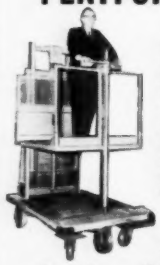
This *single* Weld-Bilt Automatic Conveyor-Lift Elevator—plus two powered Feed Conveyors and Discharge Conveyors—handles, automatically, a greater capacity than two ordinary freight elevators and at much lower cost! Automatic "memory" controls do all the work. Easily adapted to completely automatic conveyorized feed, with synchronized loading and discharge. Get the whole story now. Write for bulletin E-557.

WEST BEND EQUIPMENT CORP.
MATERIALS HANDLING ENGINEERS
335 Water Street • West Bend, Wisconsin

Circle 122 on Reader Service Card

Add new "TRAVEL-N-LIFT" Technique to your PRODUCT HANDLING

Weld-Bilt
"RIDER-BOY"
Self-Propelled
PLATFORM LIFT TRUCK



Ride with your load, up, down, forward or backward on new "RIDER-BOY"! Push-button controlled, it lifts rider and load up to 10 foot height. Saves labor, costly power equipment — speeds order-picking, re-stocking, stacking, storage, work positioning and overhead maintenance.

"RIDER-BOY" is heavy duty battery-powered. Electro-Hydraulic mechanism does all the work through Trans-Axle Transmission and fluid-type clutch. Built for strength, smooth, effortless operation, complete safety and performance economy. Write for complete details and prices on new "RIDER-BOY".

WEST BEND EQUIPMENT CORP.
Materials Handling Engineers
335 Water Street • West Bend, Wisconsin

"Muscle Savers"
for Handling Sheet Metal, Heavy Dies or Parts...

Weld-Bilt
HYDRAULIC LIFT TABLES

Easily lifts loads up to 10 tons — to heights from 26" to 42" — for production handling. Hydraulically operated through foot pump or electric operation controlled by foot switch, or push button. With or without wheels. Write for prices and bulletins. For information on our complete line write us or our nearby representative.

Hydraulic Lift and Pallet Trucks — Automatic and Portable Elevators — Conveyors — Drum Elevators — Skids — Special Equipment.

WEST BEND EQUIPMENT CORP.
MATERIALS HANDLING ENGINEERS
335 Water Street • West Bend, Wisconsin

Circle 119 on Reader Service Card

Now... SELF-PROPELLED
New Weld-Bilt
POWER-BOY
VERTI-LIFT

For Power-Driven Handling at
TODAY'S LOWEST INVESTMENT

"Double-Powered," with push-button *portability* plus *lifting*, new POWER-BOY brings power-handling equipment within the budget of every plant, every department. Electric motor operated through smooth fluid drive clutch, V-belted to "floating" rubber tired drive wheel, it moves and lifts a capacity load easily, quickly effortlessly. Features push button forward and reverse, safety braking, 180° steering, separate battery, built-in charger. Available in standard, hinged, telescopic HY-BOY VERTI-LIFTS from 60" to 112". Write for the complete POWER-BOY facts now.

WEST BEND EQUIPMENT CORP.
MATERIALS HANDLING ENGINEERS
335 Water Street • West Bend, Wisconsin

Circle 117 on Reader Service Card

BULLETINS CATALOGS FILMS

stream high pressure pneumatic conveyor systems, and controls feed rate. Bulletin F-8 dimensioned drawings and specifications for 3 sizes.

Fuller Company
Circle **430** on Reader Service Card

Industrial Truck Batteries

Specifications for all C & D batteries given in Bulletin IT-531. Die-cut pages reveal how interior of battery is constructed, show details of maker's Slyver-Clad plates.

C & D Batteries Div., Electric Autolite Co.
Circle **431** on Reader Service Card

Handling Granulated Resins

"Hopper Car Handling of Plastic Products" reports on 7 pneumatic conveyor systems used to unload plastic resin granules from hopper cars. Schematic drawings show layout of pneumatic conveyors.

Monsanto Chemical Co.
Circle **432** on Reader Service Card

Shipment Marking

"How to Improve the Marking and Taping of Shipments", Folder 3, describes equipment for stenciling, taping.

Marsh Stencil Machine Co.
Circle **433** on Reader Service Card

Pole Buildings as Warehouses

Koppers explains 3 types of pole building suitable for use as warehouses, in Bulletin W389. (In pole buildings wooden poles are employed as columns to support roof).

Koppers Co. Inc.
Circle **434** on Reader Service Card

All L-S Power & Hand Trucks

Condensed catalog 80-204 covers whole Lewis-Shepard truck line, gives specifications, pictures of trucks, tractors, manual equipment. Selector chart helps compare various items quickly.

Lewis-Shepard Products, Inc.
Circle **435** on Reader Service Card

Straddle Carrier Case Study

Savings of more than $9500 a year by use of straddle carrier to handle bales explained in Towmotor Job

Study No. G-114. Gerlinger 7½-ton capacity carrier which does it totes 24 bales of linters at a time.

Towmotor Corporation

Circle **436** on Reader Service Card

Interchangeable Conveyor Sections

New, light-weight belt conveyor sections interchangeable with standard Unibilt horizontal or inclined conveyor sections. Both live roll and gravity models. Bulletin EB460 gives dimensions, specifications.

Conveyor Specialty Co.

Circle **437** on Reader Service Card

MHE Sees London Show

We recently had an opportunity to review the British film "Accent on Handling," which is a very colorful tour of the 1960 MH exposition in London. Though much of the machinery will be no surprise to viewers familiar with American practice, some innovations make this review of British products highly interesting. Examples: a hand powered skid truck that is designed to pick up loads when there is no clearance between the undersurface of the load and the floor; an attachment for road trucks that places heavy sacks on the backs of stevedores. However, most of the film reflects emphasis on highly automated, electronically controlled systems. Some of the foreign affiliates of U.S. manufacturers displayed at the show, so a number of familiar names – Clark, Lamson, Rapistan, Yale & Towne – flashed across the screen now and then. You can get the film by writing G.B. Film Library, 1, Aintree Road, Perivale, Middlesex, England. Cost to you: postage both ways plus duty.

John Spencer, associate editor

Compact Crawler Tractors

New compact crawler tractors handle logs, offer high traction power for heavy duty dozer, backhoe, loader, and other attachments. Illustrated, with design features, specs, in Catalog UT-130.

Allis-Chalmers

Circle **438** on Reader Service Card

Automatic Nailer

How nailer forms nails from wire, drives, countersinks, clinches, heads shown in pictures. Catalog 16 also shows use in making skids, pallets, box shooks, crate panels, other wood products.

Auto-Nailer Co.

Circle **439** on Reader Service Card

Air-Supported Warehouses

Shelters made by pressurizing vinyl-coated nylon explained in bulletin series. Bulletin A-2 covers warehouse use, A-5 tank covers. Technical Bulletins T-1 to T-6 discuss, in order Material and Design, Anchors, Blowers, Entrances, Heating & Cooling, Erection & Maintenance.

Airshelters, Inc.

Circle **440** on Reader Service Card

Lightweight Hand Trucks

Safety features emphasized in folder covering Rol-Away line of aluminum alloy hand trucks. Includes models with ladders for stock picking, rack trucks for moving glass, large crates, pipe and bars, garments.

Rol-Away Truck Mfg. Co.

Circle **441** on Reader Service Card

Laher
ELECTRICS
AMERICA'S MOST COMPLETE LINE OF ELECTRIC TRUCKS, CARS AND FORK LIFTS
30
MODELS FOR EVERY MATERIAL AND PERSONNEL HANDLING NEED!
NEW LAHER DELIVERY – available with or without fiberglass cab, easily removable doors, capacity 1400 lbs. platform size 58" x 42", available with battery charging motor generator for almost unlimited mileage.
LAHER "ALL-PURPOSE" TRUCK and NURSERYMAN – toughest most versatile electric truck made, 16 gauge diamond plate body, short wheel base for extreme maneuverability – capacity 1400 lbs.
LAHER POWER LOADER LIFT, the most modern, maneuverable, easy to operate Fork available for 1000 to 1500 lb. lifts.
LAHER "PERSONNEL & SHOP CAR"
MATERIAL HANDLING DISTRIBUTORS: A FEW OUTSTANDING TERRITORIES STILL AVAILABLE. Write for 1961 Catalog and Particulars.
LAHER "BELL-HOP" – UTILITY – most versatile personnel carrier – A must for motels–hotels and plant personnel – carries six people plus luggage, etc.
Refer Sweets Catalog – engineering section – also Thomas Register
All Laher electrics feature exclusive LAHER LUB-O-MATIC control switches; AIR-VAC spring suspension; custom engineered heavy duty Laher Batteries; 2½" alloy channel steel frames; powerful G.E. motors; instant servicing with hinged tip-up bodies on most models; finest electric chargers – both selenium plate and diode type.
WRITE TODAY FOR COMPLETE INFORMATION:
LAHER SPRING AND ELECTRIC CAR CORP.
2615 Magnolia St., Oakland, California
New Albany, Mississippi

Circle **70** on Reader Service Card

Sticky bulk materials no problem with JOY Limberollers®

Every time a Joy Limberoller belt conveyor idler turns, it flexes and cleans itself. Even the stickiest of materials like triple super phosphate never have a chance to build up and harden.

This unique flexing cleaning action is a result of the Limberoller's design. Essentially, it is a neoprene covered flexible steel wire cable. Neoprene discs are molded to the cable. The ends of the cable are swedged into bearings held in a swiveling mount. Suspended between the two bearings, the Limberoller assumes a natural catenary. This curve causes the flexing with each rotation of the idler, keeping it free of any material buildup.

If you are handling materials that are sticky, abrasive or corrosive the Limberoller can solve your problems. They can be easily mounted on your present conveyor. For more information, write for bulletin 2758-90.

JOY

Joy Manufacturing Company
Oliver Building, Pittsburgh 22, Pa.

In Canada: Joy Manufacturing Company (Canada) Limited, Galt, Ontario

Circle 64 on Reader Service Card

PRODUCT NEWS

Continued from page 51

Dry Lube Penetrates

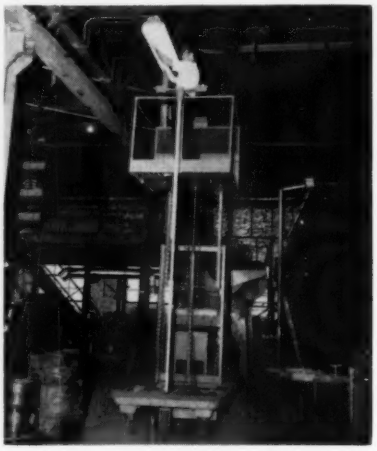
Dri Slide combines high penetration with dry, effective lubrication. Spray, brush or squirt it on. Carrier completely dissipates to leave a dry, dust-free lubricating film that withstands 100,000 psi. Made of molybdenum sulfide. There's an extreme-pressure liquid version for cable, wire rope and chain that won't drip, or collect dust and dirt.

Dri Slide

Circle **315** on Reader Service Card

For Overhead Work

Rider-Boy truck offers a portable, rider-steering, platform lift. One man can travel back and forth, up and down to pick orders or to do maintenance work overhead. Controls always at finger-tip on platform. Battery-powered—charger built-in. Recharges overnight. Capacity: 1,000 lb; lifts to 10 ft. Truck will not move if platform is above 6 ft.—feature reduces tipping danger. Many other safety features.



West Bend Equipment Corp.

Circle **316** on Reader Service Card

Machine Opens, Staples KD Cartons

Features complete automatic set up of full and partial overlap knockdown cartons. Includes carton opener and positioner for loading merchandise into carton. Closes flaps, staples them shut automatically, handles 400-1,000 cartons per hour. Wide range of adjustment.

International Staple & Machine Co.

Circle **317** on Reader Service Card

Portable Conveyor Elevates Packages

Lifts loads to 39 ft., comes in boom lengths from 20 to 50 ft. Elton BA series conveyors mounted on castors, constructed of welded angle steel. Boom raises, lowers with belt running. Belt widths from 14 to 30 in.

The Chantland Co.

Circle **342** on Reader Service Card

Compact, Gas-Powered

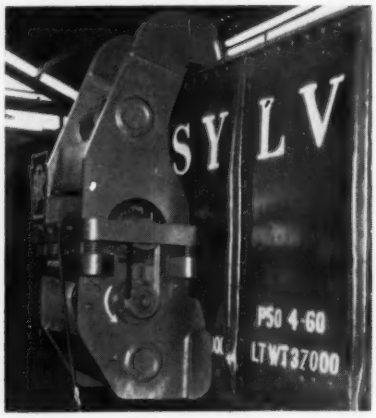
Stand-up end control lift truck for use where driver gets on and off frequently. Called "Stand-Up", comes in

2,000 and 2,500-lb. capacities. Water-cooled, 4-cyl. engine, power-shift transmission, torque convertor. Travels 8 mph forward and back, climbs 27 percent grades loaded. Services easily. Width, 32 in., turns 360 degrees in 62-in. radius. Lifts 75-fpm loaded.

Clark Equipment Co.

Circle **318** on Reader Service Card

Car Shaker for Frozen Materials



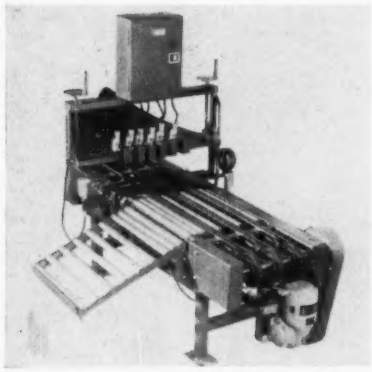
For open-top hopper-bottom railroad cars. Gives heavy impact on car top, powerful blows against side.

For rapid discharge of stubborn loads. Shaker hangs on the side, no clamping device needed. Electric drive, 10 hp. Weighs 4,200 lb. All welded construction.

Eastern Constructors, Inc.

Circle **319** on Reader Service Card

Ejects Void Cases



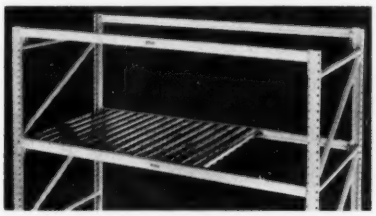
Stops customer complaints. Machine inspects each case of cans, metal-capped jars or bottles, ejects those with missing containers. Senses magnetically, works whether case opened or sealed. No operator necessary. Pneumatic roller ejector. Fits existing lines.

Peco Corp.

Circle **320** on Reader Service Card

Convert Racks for Unpalletized Stock

Speedeck channels quickly snap into spacer bars resting on pallet



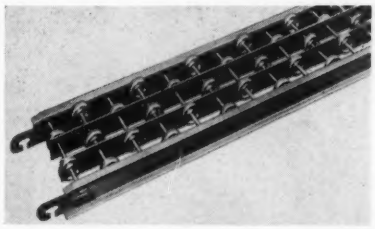
storage racks. They form decking for storage of materials that aren't palletized, support to 1,000 lb. per sq. ft. Can be spaced on rack between pallets. Bars hold channels 2″ apart, admit light, aid cleanliness. Low cost.

Storage Products Corp.

Circle **321** on Reader Service Card

Gravity Conveyors, Steel or Aluminum

Line of wheel type gravity conveyors for handling packages, other smooth, flat-bottom materials is made with galvanized steel or heat-treated aluminum frames. Aluminum track weighs half as much as steel. Load capacities to 1,600 lb. per 5′ section in steel, to 1,050 lb. in aluminum. Ball-bearing wheels in fifteen pat-



terns. Spur curves, Y-switches, accessories.

Hytrol Conveyor Co.

Circle **322** on Reader Service Card

Improved Nailer Wire

For automatic nailing machines which make their own nails. Wire is threaded, nails drive straighter, hold stronger. Old-style wire was knurled. Threaded nails twist into material, pull joints tighter, clinch better, keep machine cleaner, maker claims.

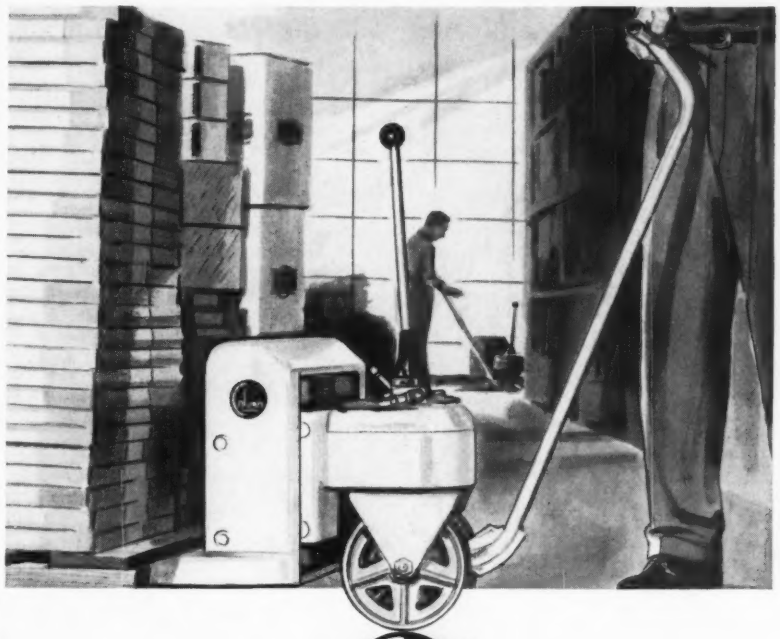
Auto-Nailer Company

Circle **323** on Reader Service Card

Portable, Supports Ton

Adjustable, telescoping tripod made of aluminum weighs 32 lbs., ex-

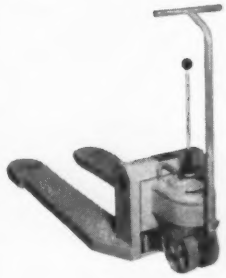
Continued on next page



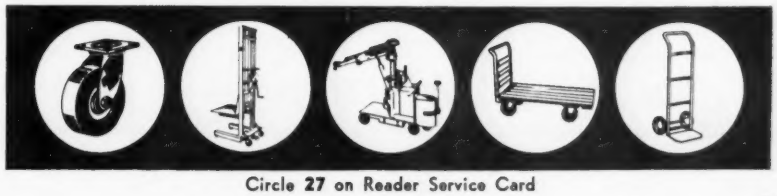
from the ground UP Colson® builds it better...

Colson pallet trucks the finest you can buy . . . for quality, ease of operation, and money-saving efficiency. From casters to completion, each part is carefully designed and precision engineered.

Colson's new 2500 and 4000 lb. capacity single and double face hydraulic leverlift pallet trucks feature exclusive roll-o-cam entry device which eliminates sliding and skidding. Spring-counter balanced handle, simple hydraulic pump and special design make them the easiest handling pallet trucks available. Write for free catalog to find out how you can save when you buy only once by buying the best . . . Colson!



THE COLSON CORPORATION 7 S. Dearborn St. • Chicago, Ill.
Plants: Jonesboro, Arkansas; Somerville, Massachusetts; Elyria, Ohio; Toronto, Can.



Circle **27** on Reader Service Card

Circle 73 on Reader Service Card

A MANSAVER COIL GRAB keeps smooth flow of coils from exit end of Wean coil Preparation Line at Wheeling Steel Corporation's Yorkville Plant.

Here is another example of how proper equipment assures maximum production efficiency . . . the Mansaver style 1362 telescoping type coil grab carries coils from a Wean high speed coil preparation line quickly and with complete safety to both coils and workmen.

This Mansaver grab was designed for handling coils horizontally. The chain wheel readily adjusts the grab to any size coil. Due to the grab's simple, yet rugged construction, it provides Wheeling Steel Corporation continuous trouble-free operation. Send for Mansaver Grab Preview Bulletin Form 1363.

Ask our District Representative into your plant to study your handling problem for presentation for our solution.

MANSAVER INDUSTRIES, Inc.
3103 East St.,
New Haven, Conn.

Also Manufactured in England by George W. King Co. and in France by Ets. Dujardin et Cie.

ON-TIME maintenance cuts down-time *DOWN*

Hobbs

INDUSTRIAL HOUR METERS

For use with gasoline, electric and diesel powered equipment

PLANNED MAINTENANCE based on actual hours of use is the answer to more GO-time and less DOWN-time on your equipment!

TRUE RUNNING TIME gives you a realistic basis for renting and leasing, service contracts, buying and selling.

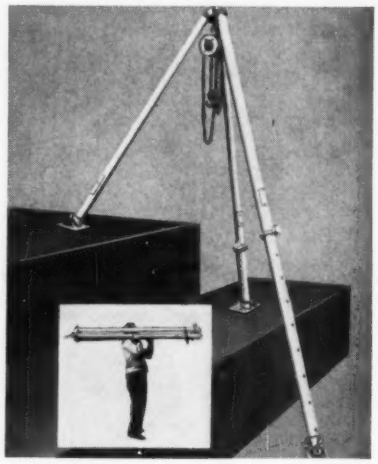
HOBBS electrical timing instruments are the basic source for the facts you need—revolution counters cannot do the job. Distributors in principal cities . . . WRITE FOR CATALOG 600.

John W. Hobbs Corporation
A DIVISION OF STEWART-WARNER CORPORATION
2061 YALE BLVD. SPRINGFIELD, ILLINOIS
Symbol of SW Excellence

Circle 58 on Reader Service Card

PRODUCT NEWS

tends to 14 ft. One man carries it anywhere, erects it quickly. Fits in



station wagon. Each leg may be set at different level, any angle. Many features.

B. E. Wallace Products Corp.
Circle 324 on Reader Service Card

Mill Truck with Ram or Fork

Liftruk is designed for continuous production handling, says maker. It

features planetary axle, automatic transmission, power steering, short turning radius. Capacities from 10,000 to 30,000 lb.; gasoline, diesel LPG engines.

Silent Hoist & Crane Co., Inc.
Circle 325 on Reader Service Card

Protects Fragile Items

Excellent cushioning properties are claimed for Safe-T Flo-Pak packing material. Fast, easy to use. Composed of resilient, hollow paper cylinders 3/4" long x ¼" diam. You pour them around an object to suspend it securely in a container. Re-

duces packing time as much as 75 percent. Clean, odorless, reusable,

won't shrink, keeps resilience. Resinous coating stops migration of packed items.

Safe-T Flo-Pak

Circle **326** on Reader Service Card

Outdoor Vacuum Cleaner

Plantman Dynavac sucks up all sorts of trash, litter, cigarette butts—even paper plates from concrete,

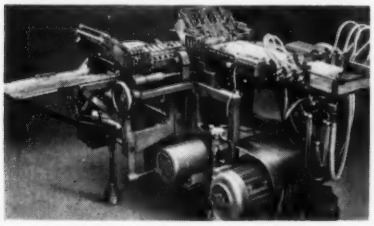
lawns, gravel surfaces. Powerful, engine-driven—simple as a lawn mower to run. Easily emptied without removing bag. Machine and nozzle heights adjustable.

Handling Devices Company, Inc.

Circle **327** on Reader Service Card

Folds Package Inserts

Master Minifolder turns out automatically hundreds of inserts per minute, folds each up to 8 times. Smallest



fold, 9/16". Stream suction hopper feeder handles any stock—coarse or fine, even finest tissue. Max sheet size, 8½" x 11¾"; Min. sheet size, 2" x 2¾". Stepless variable speed.

Super Speed Inc.

Circle **328** on Reader Service Card

Continued on next page

USED BY TOP NAMES IN INDUSTRY AND TRANSPORATION

With "Ship To" frame pre-printed by carton maker, shipping clerk uses Multistamp Duplicator to address up to 1000 pieces of the same shipment with the same low-cost stencil . . identically, accurately, quickly, easily.

Using Multistamp FORM-CUT stencil, printing the form and fill-in data at the same time is an easy, one—man..one—hand operation. Your form is custom die-cut in the stencils . . you fill them in with ball point pen or typewriter.

EASY TO READ
QUICK DRYING
FADEPROOF
WATERPROOF

MULTISTAMP **Stencil Addressing System**

Quickest Way for **Volume Shipping**

Shipping department addressing errors are virtually eliminated when address and routing information are printed directly on cartons by the Multistamp Stencil Duplicator. The print becomes an identical smear-proof . . fade-proof . . waterproof . . permanent part of every carton. Following simplified Multistamp Marking Methods, the address stencil is cut in the same typing which fills out shipping order, bill of lading, invoice, and other forms. One typing . . one easy operation.

Write for your **FREE copy of our How-to (and Why) Story**

MULTISTAMP
STENCIL DUPLICATOR
THE MULTISTAMP CO. NORFOLK, VA.

Send me a copy of your Multistamp Marking Methods book.

FIRM .....

By ..... Title .....

Address .....

City ..... Zone ..... State .....

Circle **78** on Reader Service Card

Circle 1 on Reader Service Card

ACE

PALLET ROLLERS

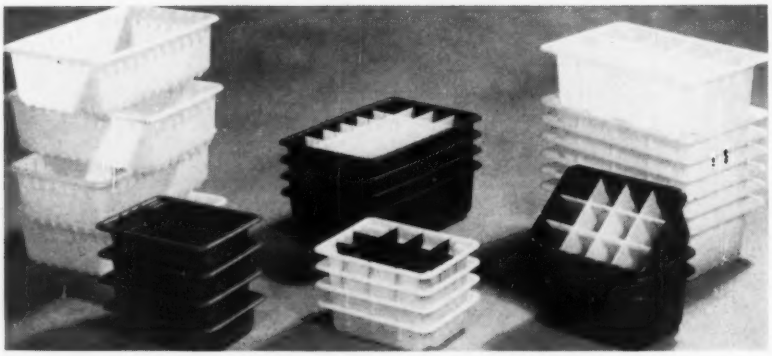
Free Your Forklifts For The Jobs They Do Best

You can use your forklifts far more efficiently when Ace Pallet Rollers take over the short moves. Five special-purpose designs available.

ACE SWIVEL KING (right) permits effortless movement *in any direction*. Five frame sizes, 4000 lb. capacity. Send for Engineering Bulletin 104K.

ACE ENGINEERING CO.
222 Napoleon Street • San Francisco

PIONEER TOTEM BOXES



These features SAVE you money

- Deep nesting — saves storage space
- Easily divided into your choice of compartments
- Grease and acid resistant
- Can withstand temperatures from –180°F to 250°F without distorting
- Round corners make cleaning easy
- Colorfast
- Available in a variety of sizes

PHILLIPS 66 MARLEX PLASTICS

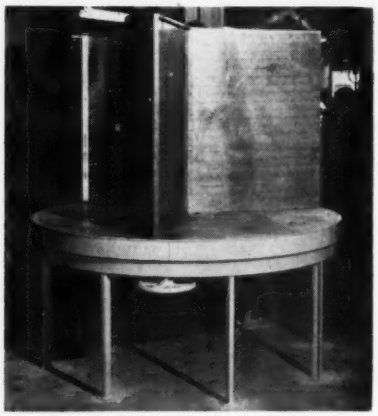
PIONEER PRODUCTS, INC.
3729 E. Blacklidge Drive • Tucson, Arizona • Phone EA 5-3541

Circle 94 on Reader Service Card

PRODUCT NEWS

Need a Turntable?

Maker offers standard welded steel turntables that adapt for assembly,



welding, finishing, other semi-automatic processes. Wide range of models, diameters, capacities-manual and power-driven, flush or top of floor.

Chase Foundry & Mfg. Co.

Circle **329** on Reader Service Card

Prefabbed Wood Shelf

Erected rapidly for storage or stock room. Uprights made of fir, shelves are laminated pine. Adjustable in two inch heights. Comes in

48 combinations of height, width, depth. All shelves support 500 lb. Furnished in natural sanded wood, available sealed, sealed and lacquered, stained, painted. Accessories include drawers, counter tops, doors, etc.

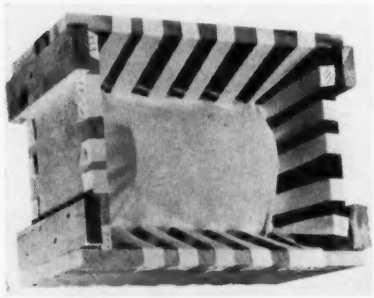
Lundia, Swain & Myers, Inc.

Circle **330** on Reader Service Card

Shockproofs Hard-to-Pack Objects

System suspends them in web of interlaced fabric strips to minimize and distribute impact shocks. Strips made of industrial nylon encased in

tough plastic. Herculite 80 fabric tear strength exceeds 100 lb. Pack-

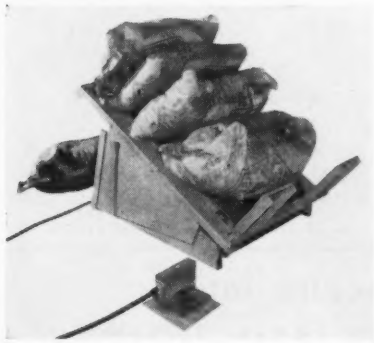


ages take less cube shipping, often weigh less. Containers may be downgraded. Technical data sheet shows many desirable properties.

Herculite Protective Fabrics

Circle **331** on Reader Service Card

Destacks Bags for Conveyor



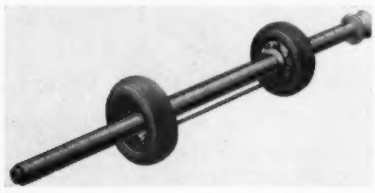
Eliminates manual loading of bags on conveyors. Hand truck operator tilts his load onto receiving platform of destacker, presses foot switch. Unit discharges bags one-by-one onto loading conveyor, spaces them out. Portable, fully guarded, prevents damage to bags and contents. Cycle adjustable, may be stopped any time.

Fairfield Engineering Co.

Circle **332** on Reader Service Card

One-Man Mandrel

Pneumatic expanding mandrel prevents damage to rolls and cores, stops slippage, saves time. Two or more



rubber tires spaced along shaft connect in series to air hose, grip roll when inflated. Shafting is quick, easy —a one-man job. Mandrel slips in

Continued on next page

Circle **69** on Reader Service Card

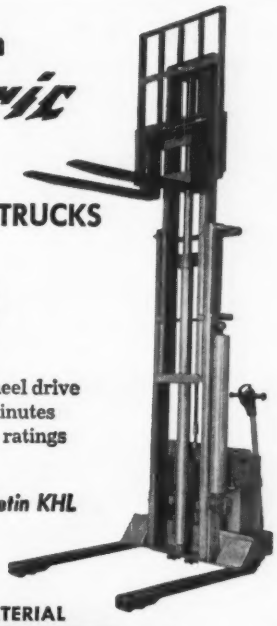
modernize with
HydroLectric

A GREAT NAME IN LIFT TRUCKS

- Two driving wheels instead of one
- Braking with handle in any position
- Automatic parking brake (optional)
- Sealed alloy gears instead of chains
- Sealed ball-bearing rollers in masts
- 100% more steering ease with two wheel drive
- Power unit removal complete in 20 minutes
- Greater tire capacity equivalent load ratings

LIFT TRUCKS INC. W.W.W. STUEBING CINCINNATI

• *Write for Bulletin KHL*



A TRUCK FOR EVERY PURPOSE AND MATERIAL

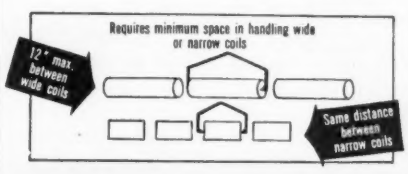
LIFT TRUCKS, INC.
CINCINNATI 14, OHIO

Handling Coil Stock?

CHECK THESE
C-F LIFTER
ADVANTAGES

- 1 Lifter handles wide range of coil sizes
- Requires minimum of only 10" to 12" between piles —saves storage room
- 1 man operation — eliminates hookers
- Positive grip on coil — no damage to material

• C-F Coil Lifters are saving time and labor in many plants and warehouses because they can pick up, carry and set down a coil of steel faster and safer than any other method. Infinite jaw openings permit handling a very wide range of coil widths . . . carrying legs open fast, stay open until operator closes them on coil. Narrow legs require minimum space between piles — a space saving advantage. Made in motorized models for crane cab or pendant operation as well as manual types with chain wheel, in capacities from 3 tons up. Powered Rotating Heads available. Opening ranges to suit your requirements. Write for illustrated Bulletin.



CULLEN-FRIESTEDT CO.
1320 South Kilbourn Avenue • Chicago 23, Illinois

Circle **29** on Reader Service Card

PRODUCT NEWS

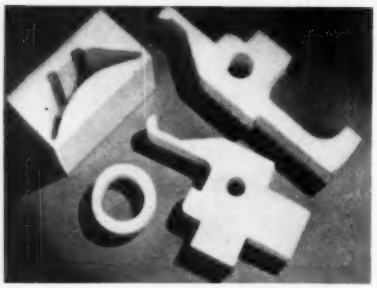
without binding. Rolls revolve on true center at any speed. Size range, 8 to 24-inch core I.D., length to specs.

Perfection Tools & Mfg., Inc.

Circle **333** on Reader Service Card

Reusable Packing

Pack-Tin expanded plastic foam approved by the military. Firmly immobilizes irregular shapes of any size. Won't rust, resists abrasion. Closed



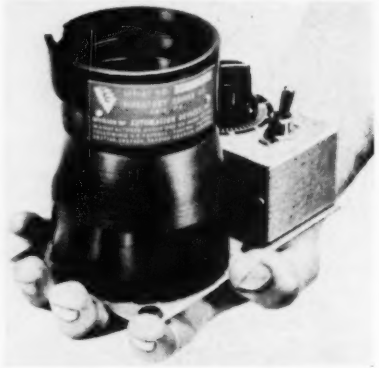
cell construction, light weight, buoyant, comes in colors. Not affected by pressure, vacuum, most chemicals, accelleration, etc.

Pac-Tron, Inc.

Circle **334** on Reader Service Card

Feeds Tiny Parts

Compact vibratory feeder automatically orients, feeds tiny parts to machine, assembly operations. Three-inch bowl on Model #3 base unit



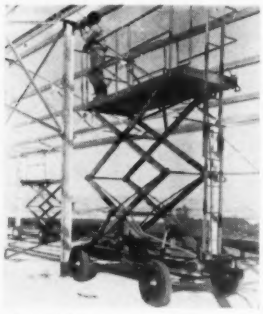
handles disc-shaped parts ¼" diam. or smaller, cylindrical shapes 5/16" or shorter. Escapements, tracks available. Has rheostat, switch, power cord.

Automation Devices, Inc.

Circle **335** on Reader Service Card

Lifts Men, Materials

Sky Witch Work-Load Lift provides a stable work platform for heavy overhead work. Gasoline-powered hydraulic system raises 1,000 lb. to 17 feet. Other sizes, capacities, heights—mounted on casters, skids,

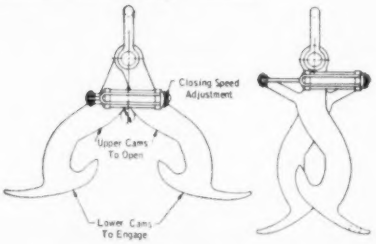


tires. Suitable for maintenance and construction.

Witch Marketing Co.

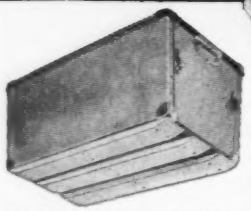
Circle **336** on Reader Service Card

Self-Loading Hook



Auto-Bi-Hook for cranes, other operations. Engages, holds, releases

Fedco
STACKING
FIBRE BOXES
TOTE
MILL
STOCK
CONVEYOR
NESTING



CONVEYOR BOX with solid hardwood or runners on bottom for all types of conveyor systems.

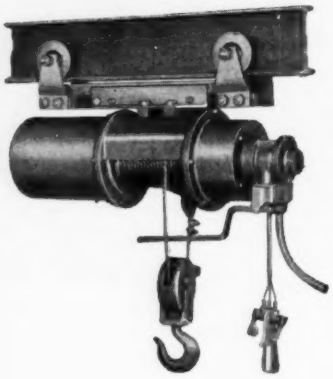
Light, strong, durable. Expertly constructed for heavy duty. Body and bottom of superior grade fibre. For moving, storing or assembling small parts and materials. Made in sizes to your requirements.

Also a complete line of FEDCO Fibre Box Trucks and FIBEROK Disposal Cans. Write for Catalog.

Federal FIBRE CORPORATION
3704 Tenth Street, Dept. 7, Long Island City 1, N. Y.

Circle **45** on Reader Service Card

Worth Looking Into...
DETROIT AIR HOISTS



Ask for Bulletins 860, 861, 862

Push Button Control

Other Modern Design Features

Consult us on Air Hoists for every type of application

DESIGNERS AND MANUFACTURERS FOR NEARLY SIXTY YEARS

DETROIT HOIST & MACHINE CO.
8215 Morrow Street • Detroit 11, Michigan
Designers and Manufacturers Since 1905

Circle **33** on Reader Service Card

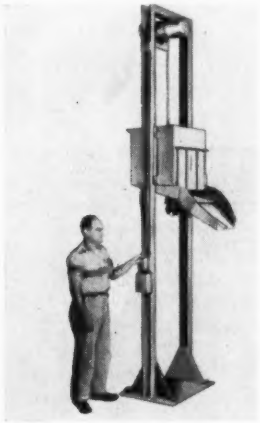
automatically. Simply rest it on the load, no man needed. Rotates itself into alignment when mounted on swivel or cable. Dashpot delays closing of hooks when opened wide to release, doesn't delay closing when not opened wide to pick up load. Engages with chains, cables, bars.

The Bi-Rail Company

Circle **337** on Reader Service Card

Keeps Parts Moving

Hopper elevator loads parts feeders in automatic or semi-automatic systems, eliminates manual lifting.

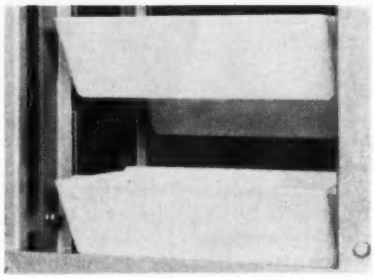


Electric vibrator keeps parts moving freely out of hopper and through chute. No wearing parts in vibrator. Hopper sizes from 3 to 10 cu. ft., lifts from 10 to 20 ft.

Syntron Company

Circle **338** on Reader Service Card

Nylon Buckets for Elevators



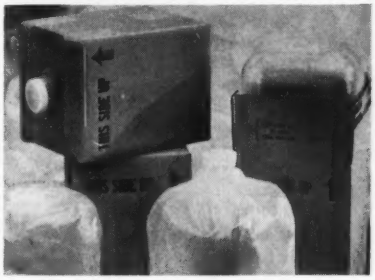
Durable, easily cleaned Whiz Lifter nylon bucket meets sanitary codes. Conveys free-, semi-free-flowing products like pharmaceuticals, candy, tobacco, seed, small hardware. Smooth surface, no cracks or crevices to retain particles. May be washed, sterilized with no loss of shape or color. Easily removed, replaced. Won't permanently bend or break if dropped.

Frazier and Son

Circle **339** on Reader Service Card

Ships, Stores Flat, Holds 5 Gals.

Flex-O-Boy container, made of polyethylene plastic, offers space-saving, handling ease, economy. It stores nearly flat, pops up to hold 5 gals. of acid, alkali, or foodstuffs like syrup, drink concentrate, etc. Lightweight, durable, approved for many liquids.



Associated Plastics, Inc.

Circle **340** on Reader Service Card

Swivel Caster Brake

Dual-wheeled, 10″ diam. caster with self-energizing brake. Rated 2,000 lb. Features 2 large concentric ball load bearings, Timken thrust bearing. Light kick-down locks brake against movement in either direction. Special rubber tires cut effort to move by a third.

Roll Ritr Corp.

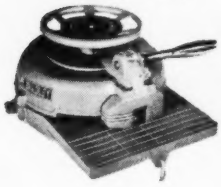
Circle **341** on Reader Service Card

YOUR GOOD PRODUCT DESERVES TO BE SHIPPED with THE PROPER MARK

MARKING RULE 6 says: freight must be stenciled or otherwise durably and plainly marked.

DURABLY means in a durable manner; lasting in spite of hard wear or frequent use. (You get durability with D-B ROL-IT-ON stencil inks.)

PLAINLY means easy to read. The marking should be as large as possible. (There is a D-B stencil machine in a letter size to meet your every marking need.)

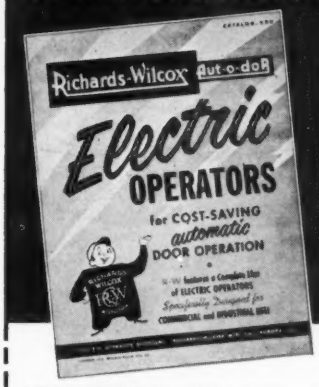


FOR FURTHER INFORMATION WRITE . . .

DIAGRAPH-BRADLEY INDUSTRIES Inc.
P. O. BOX 269 HERRIN, ILLINOIS
DISTRIBUTORS IN ALL PRINCIPAL CITIES

Circle **34** on Reader Service Card

NEW CATALOG
DESCRIBES R-W ELECTRIC OPERATORS FOR DOORS & GATES!



R-W offers a complete line of top-quality Electric Operators for doors and gates specifically designed to meet the rugged demands of industrial use. Whether it swings ...slides ...raises or folds—R-W can open it—*automatically.*

MAIL COUPON TODAY

RICHARDS-WILCOX MFG. CO.
420 WEST THIRD STREET
AURORA, ILLINOIS

Please send, without obligation, my free copy of Catalog No. 200.

NAME_____
FIRM_____
ADDRESS_____
CITY_____ STATE_____

Circle **97** on Reader Service Card

mhe ASSOCIATIONS

AMHS New ways to broaden, simplify, and improve the structure and activities of AMHS were the main topics of discussion at the semi-annual board meeting in Cleveland, January 21-22. This attitude was evident in:

- Appointment of W. B. McClelland as headquarters secretary, to be located in Cleveland
- Agreement to study the Freeman plan for increasing MH status (MHE, October 1960) for board consideration in June
- Further development of the Greer Proposal for simplifying organization structure
- An expanded report on the integrated materials systems by Tom White
- New vigor in inter-society activities as evidenced by Sam Isaacs' work with ASTE, AIIE, and AIEE.

Members of a Philippines warehousing and storage productivity team learned about AMHS activities on their recent tour of The Industrial Publishing Corp. (See News Roundup, page 8). Herman Maschmann, Cleveland Chapter vice president, told the visitors how AMHS works in chapter and national affairs, and

with overseas affiliates. Photo shows Herm discussing an AMHS brochure with Thomas F. Gomez, team leader.

FBA Jerome H. Stone has been elected president of the Fibre Box Association. He is executive vice president, Stone Container Corp. William J. Cassady, Jr., is new vice president. He is vice president and general manager of the Container Division, Mead Corp.

Box makers at the 21st annual meeting of FBA were told by John McKnight, vice president, The Econometric Institute, that fibre box demand should increase 60 percent from 1960 to 1970. Demand in 1965 should average 2.7 billion square feet a week, and 3.5 billion square feet in 1970.

Elected directors of FBA are: K. R. Mull, Packaging Corp. of America; E. D. Dodd, Owens-Illinois Glass Co.; N.J. Downing, Diamond Hoosier Container; C. W. Hollingshead, General Fibre Box Co.; P. P. Wojtul, Continental Can Co.; C. B. Dollison, Fairmont Box Co.; I. C. Keller, Western Kraft Corp.; and N. K. Plantefaber, Kalamazoo Container Co.

A. W. Hoffman, quality control manager, Fibre Drum and Corrugated Box Division of Continental Can Co., has been reelected chairman of the Fibre Box Association's Technical Committee.

SPHE Missouri Chapter of the Society of Packaging and Handling Engineers heard William J. Herald speak on "The Versatile Fibre Drum —Tool of the Packaging Engineer" at a recent meeting. Mr. Herald is Southern district manager of the CCC.

GIA Fourth Annual Technical Section Seminar of The Gummed Industries Association was held Feb. 23 at the Hotel Roosevelt, New York City. Chairman was Keith H. Williams, Mid-States Gummed Paper Division of Minnesota Mining and Manufacturing Co. Main address was given by Dr. Thomas M. Lodahl of the Massachusetts Institute of Technology's Industrial Management School. His subject: "Organizing for Creative Activity."

CFTMA Next Caster and Floor Truck Manufacturers' Association meeting is scheduled for March 1-3 at Ft. Lauderdale, Fla. This meeting will take the place of the usual summer resort meeting. Sessions will be at The Beach Club. Members are invited to bring their wives.

FPBA Seventeen printing, packaging and merchandising experts will serve as judges in the 1961 Folding Carton Competition of The Folding Paper Box Association of America. FPBA will hold its anual meeting March 20-22 at the Drake Hotel, Chicago. The exhibits will be open to the public March 23 in the French room of the hotel. Entries will be judged in four major categories, and 100 award winners will be chosen.

MHEDA Theme for the 1961 convention is "Better Methods For Profit." The 7th annual convention will be held at the Denver-Hilton Hotel, Denver, Colo., June 1-3. Jack D. Patten, chairman, has invited H. Merrill Bowman to speak on the way to gain better understanding between distributors and manufacturers. Mr. Bowman is vice president, T. B. Wood's Sons Co.

"Metal Finishing & Forming Material Handling" is the subject of the MHEDA National Material Handling Center's course for the week of April 17. Other courses scheduled are: May 8, "Brewery & Distribution Warehouse Material Handling"; May 22, "Food Canning & Processing Material Handling"; June 19, "Paper Industry Distribution Material Handling"; July 10, "Department Store Material Handling"; August 14, "Aircraft Industry Material Handling"; September 25, "Metal Industry Warehouse Material Handling"; and October 16, "Milk Processing & Distribution Material Handling."

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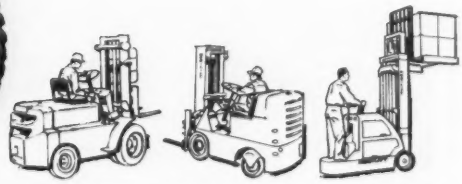
Only Moline Mobilift makes all its own power train components—perfectly matched to avoid power loss.

This Mobilift MY 40 can haul a 4,000 lb. load up a 31% incline . . . effortlessly. Because Moline makes all its own engines and "power train" components and matches them perfectly in a highly simple design, the MY 40 delivers more power at the drive wheels than any other truck in its class. Many parts are interchangeable with other Mobilift trucks—another Moline exclusive. And Mobilift gives you exclusive on-the-go shifting (no pedals); the operator can move more tons per hour. One more Mobilift exclusive: full pressure engine lubrication.

The MY truck also comes in the 6,000 lb. capacity MY 60. Choose from a full line of stand up, sit down or tow trucks. For full information write Minneapolis-Moline today. Distributed by John Morrell Manufacturing Co., a subsidiary of Minneapolis-Moline Co., Hopkins, Minn.



MY40 MY60 M30 M40 M50 STAND-UP

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Materials handling equipment • Farm machinery and tractors • Construction machinery • Power equipment • Engines • Electronics

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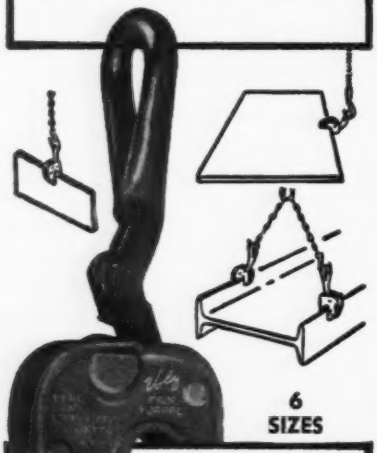
Imitated, but never duplicated, Merrill Lifting Clamps are Drop Forged to give you Safety in Handling and Economy in Operation.



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Rated capacity — 3 ton (6 tons per pair). Completely drop forged . . . Heat treated.

Over 25 Material Handling Devices described in our catalog C-3.

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mhe INDUSTRY NEWS

Lohr Elected American MonoRail Vice President

Quigg Lohr has been elected a vice president of the American MonoRail Co. Lohr has been with the company since 1941.

Lohr

He was named assistant secretary of the firm in 1944, a director in 1956, and secretary two years ago. He continues as secretary and director. He has represented MonoRail in labor negotiations for 10 years and will continue in that capacity. Before joining MonoRail, Lohr was employed by the Chicago Pneumatic Tool Co.

OBITUARY

Louis F. Heckmann, vice president in charge of sales for The Union Metal Mfg. Co. died of a heart attack Jan. 14. He was 63.

He had been with Union Metal since 1937. During World War II, he was manager of material priorities. He was appointed vice president in charge of sales in 1959.

Prior to joining Union Metal, he was manager of street lighting sales for The Westinghouse Electric Corp.

National Fibre Expands

National Vulcanized Fibre Co., Wilmington, Del., has acquired the Fisher Mfg. Co., Inc. of Hartwell, Ga.

The Georgia firm is the second acquisition announced by National Fibre in the last 18 months. In 1959, National bought the Parsons Paper Co. of Holyoke, Mass.

Eugene R. Perry, National Fibre president, says his company should be producing at a volume of $32 million in 1964 and earning at least $3.25 per share on an increased number of shares.

National expected its 1960 sales to approach the record level of $24 million posted during 1959. "Earnings for 1960 will be lower than last year but should be slighty in excess of $2 per share, considerably better than the $1.85 average for the prior five years" Perry points out.

Top Management Changes at Harnischfeger Corp.

Organizational changes at Harnischfeger Corp. have been announced following the annual stockholders' meeting and board of directors' meeting.

William S. Burdick has resigned as vice president of engineering to

Burdick

Pratte

assume the position of corporate consulting engineer. Bernard Pratte has been elected assistant to the president. Pratte has been general manager of Harnischfeger's Pacific Division since 1955, headquartering in Los Angeles. Named to the post of vice president of engineering is Robert D. Teece. For the last 2 years, Teece was assistant to the president.

In other changes, William L. Carter has been appointed vice president of finance and treasurer; and Richard B. Maxson has been promoted to national sales manager for P & H power cranes and shovels.

Yale & Towne Appoints

Frank R. Demmerly has been appointed corporate controller of The Yale & Towne Mfg. Co., a new staff executive position. He is headquartered at the corporate office, New York City.

Demmerly

Before joining Y & T, Demmerly was controller of the RCA Victor Television and Victor Radio-Victrola Divisions and of the RCA Sales Corp.

Continued on page 110

Whether for transportation of your bulk products by rail, ship or truck or for use in handling bulk materials in your plant, there is a Youngstown top loading and bottom unloading container which will completely satisfy your individual requirements. Size of container is no obstacle. Youngstown top loading and bottom unloading containers range in size from 40 cubic feet to 325 cubic feet. Within this range there is a Youngstown container which will handle any bulk material effectively and economically. And it will do so with an appreciable reduction in labor costs and other operational savings.

Youngstown top loading and bottom unloading containers are built to withstand the most rigorous conditions. Their sturdy construction insures a long repair-free life. This construction also insures complete discharge of material and clean containers. These containers are easily handled by crane or lift truck. They can be stacked.

Discharge of material from the containers is controlled from the crane cab or lift truck seat. The time and labor savings flowing from such control is evident. Material discharge is simple and effortless. Closing and locking of the bottom discharge door is entirely automatic.

The discharge door is of sturdy, reinforced construction. When closed it is protected by the base of the container within which it lies. And this door is associated with the container base in such a manner that loss of material, however fine, is prevented.

The discharge door is automatically locked by Youngstown's patented lock which securely retains the door in closed position. The lock is completely housed and protected from the material in the container. When the container is supported upon its base the lock is relieved of all strain. The lock is tamper-proof.

The cost of Youngstown top loading and bottom unloading containers is soon returned by the savings which they produce.

● ***Consult with us for improved handling of your bulk materials***

THE YOUNGSTOWN STEEL DOOR CO.

Camel Sales Company • Camel Company Limited

CLEVELAND • CHICAGO • NEW YORK • YOUNGSTOWN

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INDUSTRY NEWS

Stanley Steel Names Two Sales Appointments

Two appointments are announced in the sales department of Stanley Steel Strapping, division of The Stanley Works.

Day

Hoffman

Theodore A. Day has been named assistant regional manager for the Chicago area. Charles L. Hoffman has been appointed sales training and market research manager in New Britain.

Maico Names Sales Head

H. Kenneth Stenstrom has been named director of Maico controls sales. Before joining Maico, Stenstrom served as the Chicago district manager for the Mobil Oil Company, managed the Gaare Oil Company in Palatine, Ill., and operated his own conveyor business.

Fairbanks, Morse & Co. Names Four Executive Appointments

Bjarne R. Eng, controller since April, 1959 has been named treasurer of Fairbanks, Morse & Co. He also continues as vice president.

In other company changes, Bernard A. Feuerstein, a partner in the Wall Street law firm of Scribner and Miller for two years, was appointed company secretary as well as general attorney. Richard E. Isaacson, formerly vice president and general manager of Home Equipment Division of White Sewing Machine Co., Cleveland, succeeds Eng as controller. Chris E. Clausen has been appointed vice president in charge of the Scale Division at Fair Lawn, N.J. He also continues as Division General Manager.

Acme Steel Names Cooper Public Relations Director

Harry J. Cooper has been appointed director of public relations for Acme Steel Co. He had been with Lions International in Chicago in the same position since 1953. Previously, he held traffic, sales, and public relations positions in the commercial airline industry.

Hyster Appoints Johnson Director of Personnel

Dar Johnson, Sr. has been appointed director of personnel, Hyster Co. He will remain at company general offices at Portland, Oregon.

Johnson

Johnson served as sales promotion manager for many years prior to 1957. Since then, he has been manager of organization development. Responsibilities of personnel managers at the company's seven domestic and overseas plants remain the same.

Link-Belt Establishes International Division

Link-Belt Company has established an International Division with headquarters in the company's executive offices in Chicago. Donald E. Thal

CUT COSTS for Packing BAGS

FILL and WEIGH with

CODDINGTON AUGER-MATIC Bag Packer

Low Cost, portable AUGER-MATIC packs any material from powder to pellets in paper bags . . . shuts off automatically when desired weight is reached.

Valve bags fit snugly on AUGER-MATIC spout so no dust escapes . . . keeps bags clean . . . eliminates costly tieing or bag closing equipment.

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COMPANY.....

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CITY.....ZONE.....STATE.....

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ONE-MAN CAR DOOR OPENER

Write for complete details and railway products catalog

ONLY $45.00 F.O.B. Bowerston

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has been appointed general manager of the new division. He will administer the company's overseas activities outside of the US and Canada.

Thor Power Tool Names Two Sales Managers

B. J. Herron, district sales manager at Thor Power Tool Company's San Francisco branch the last four years,

Herron

Householder

has been appointed district sales manager of the Seattle branch. Succeeding Herron at San Francisco is J. R. Householder.

Herron has been with Thor 41 years. Householder has been an industrial service engineer in the company's Chicago branch since 1954.

J. I. Case Co. Announces Service Manager Appointments

Appointments of W. A. Smith as industrial service manager; M. E. Milestone, agricultural service manager; and A. L. Weaver as export sales manager have been announced by the J. I. Case Co.

Smith

Smith has been acting manager of industrial service. Milestone was assistant agricultural service manager, and Weaver was regional service manager.

Lamson Appoints Mercado Director of Export Sales

Lamson Corporation announces the appointment of Carlos H. Mercado to the post of director of export sales. He comes to Lamson from the Porter-Cable Co. of Syracuse where he held a similar position.

H. M. Ross Elected VP of Hewitt-Robins, Inc.

Hamilton M. Ross has been elected a vice president of Hewitt-Robins Incorporated. His responsibility is for contract engineering operations.

Ross will be assisted by Martin

Continued on next page

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Dumping standard drums, barrels, boxes and bags is a cinch!

MORE IMPORTANT, no matter what size, shape or type container you use to process free-flowing material — even special in-plant containers — ESSEX can supply the necessary unit for dumping or work-positioning.

ESSEX Dumpers are flexible in design. They can be engineered to suit your individual requirements. For the safe, reliable, economical way to lift and dump (or position) material in any container . . . CALL UPON ESSEX FOR THE ANSWER.

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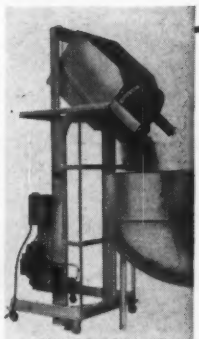
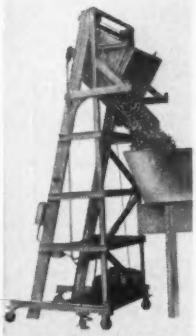
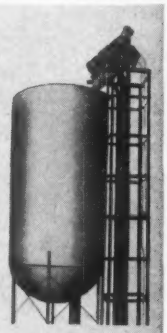
Dumps up to 4 feet (higher if platform mounted). Load capacity in excess of 6000 pounds.



JUNIOR DUMPER
Dumps up to 8 feet (higher if stationary unit). Load capacity 700 pounds.



SENIOR DUMPER
Dumps up to 20 feet. Load capacity in excess of 4000 pounds.



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Dumps to any practical height. Load capacity in excess of 4000 pounds.

YOUR HEAVY WEIGHING EQUIPMENT CAN BE IMPROVED

Hook up Chatillon's new ISO-SEAL® legal weight crane scale to your heavy lifting equipment and you'll have the most accurate and efficient weighing system you can get. The load will be weighed as it's moved, saving time and money . . . and it will be weighed accurately (to 1/10 of 1% of capacity).

The ISO-SEAL® Scale is maintenance free — no oiling necessary — no fluids to replace. It is built and guaranteed for long accurate use.

This scale has been approved by States' Bureau of Weights and Measures as legal for use in trade.

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125th ANNIVERSARY CHATILLON

Manufacturers of Scales, Force Measuring Instruments and Precision Springs Since 1835

Circle 23 on Reader Service Card

INDUSTRY NEWS

Vander Laan. He has been appointed director of engineering sales with responsibility for world-wide sales of bulk material handling systems.

Succeeding Ross as manager of the Robins Conveyors Division is Norman M. Godfrey. Godfrey had been manager of the company's Eastern sales region.

Acme Steel Names Financial Vice President

James A. Marohn has joined Acme Steel Company's staff as financial vice president. He formerly was executive vice president and member of the board of The Leece-Neville Co. of Cleveland.

Marohn

Marohn is a certified public accountant, and a member of the Controllers Institute of America, American Institute of Certified Public Accountants, Pennsylvania Institute of Certified Public Accountants, the Canadian Club of New York, and the Chicago Athletic Association.

Penco Names Lang As New York Office Head

Albert F. Lang has been appointed New York district sales manager for Penco Division, Alan Wood Steel Co. He formerly was New England district manager.

Lang

Lang will be responsible for sales supervision in the metropolitan New York area, Northern New Jersey, Long Island, and the New England states.

Santuccio Elected President

S. Arthur Santuccio, president and treasurer of General Strapping Co., New York, has been elected president of Harrison White, Inc., the parent company for GSC.

Greer, Harmon Promoted by Hyster Company

Jack P. Greer has been appointed manager of Hyster Company's retail branch in Chicago. Named to succeed Greer as Midwest regional manager is William C. Harmon.

Greer

Harmon

Harmon had been Midwest regional representative. Greer has been with Hyster since 1954. Harmon joined the company in 1953.

Wiretyer Names Service Manager

Donald Van Valkenburgh has been named service manager for Wiretyer Corp. He has been with the company 8 years. Prior to this appointment, he was assistant service manager.

Hofer and Smith Appointed To Key Bostitch Positions

W. E. (Eric) Hofer and Roy Smith have been named to key positions in product development and improvement at Bostitch, Inc.

Hofer is product improvement man-

WIRE-TAINERS

Immediate Delivery

. . . at cost saving prices

STANDARD SIZES 2,000 and 4,000 lb. Capacities		
WIDTH	LENGTH	HEIGHT
32	40	24
*32	40	28
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40	48	24
*40	48	30
48	48	24

*Side or End Gate Models

They Stack LOADED OR FOLDED

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America's Finest Industrial Trucks and Trailers

WAREHOUSE OPERATION
JAKES CONVEYOR TRUCKS

★ Slash Handling Costs
★ Speed Up Operations
★ Reduce Damage To Merchandise

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Established 1891

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ager, and Smith is field product engineer. Hofer has been with the company 14 years. Smith has been on the sales staff of Bostitch-Atlanta for the last 6 years.

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Rates: Cost of all ads in this section is $20 for the first inch and $15 for each additional inch or fraction. Rates for display ads in this section will be sent on request. All classified advertising is payable in advance.

NEW FORK LIFT PARTS

Clark 3 ton Utilitruc upright assemblies. Part No. ACL-1409-104. Complete. Cheap. Many other parts available. Send requirements. J. P. Davenport Co., Box 18152, Louisville 18, Ky.

CHIEF ESTIMATOR WANTED

Package conveyor manufacturer in Chicago area offers excellent opportunity for experienced estimator to assume charge of estimating department. Good salary and profit sharing plan. Write MATERIAL HANDLING ENGINEERING, Box 3361, enclosing complete resume.

SALES MANAGER

Conveyor Equipment Manufacturer
Chicago Location

Requisites: At least 5 years sales experience in material handling; M.E. Degree; experience in managing salesmen and setting up dealers and agents. Substantial salary plus incentive bonus. Write Box 3161, MATERIAL HANDLING ENGINEERING.

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Rack manufacturer will buy or license device for locking shelf beam to upright on adjustable storage racks. Write Box 3261, MATERIAL HANDLING ENGINEERING.

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World-wide corporation has a need for an experienced industrial engineer who has specialized in material handling problems. Work is of a diversified nature involving most all types of equipment. The person selected must have the initiative and ability to handle a project from beginning to end. I. E. degree required. Prefer 2 years related experience. Salary commensurate with ability. Send resume with salary requirements to MATERIAL HANDLING ENGINEERING, Box 3461.

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Portable
BAG CLOSER

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What's Your Handling Information IQ? tosses you a challenge to test yourself on the latest handling information. Read it . . . fill in the answers . . . find out how you rate.

Comparative Analysis of Order-picking Systems will give you a handy guide for evaluating and selecting. Will cover manual, manual-plus-equipment, and automatic order picking.

Material Control from the Systems Viewpoint is article number 3 in MHE's Project Upgrade series. Tells how you'll get more out of your job and be of greater value to your company by viewing handling problems from the outlook of integrated systems.

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BT PALLET TRUCKS
HEAVY DUTY
ALL HYDRAULIC

NOW ONLY $350.00 F.O.B. Chicago

- Lowered Height 3¼"
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YOUR CHOICE of sizes in either model:
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Wheels: Steel, Rubber or Bakelite (at no extra cost).
Specify Model No., Fork width and length and type of wheels wanted.

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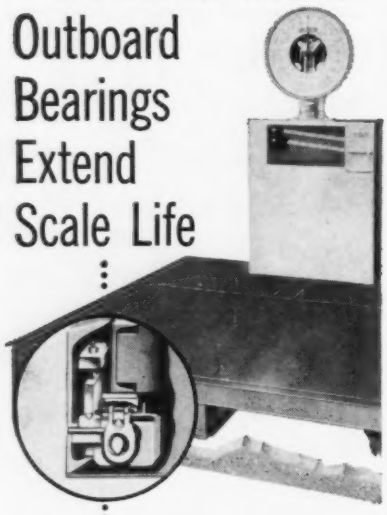

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AN AUTOMATIC BATTERY RECHARGER!

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A completely new concept in battery recharging, developed by the pioneer of Silicon self-regulating battery chargers. Units can be mounted on wall, floor, or truck. Over 70 standard models to choose from. More than 18,000 units in use today!

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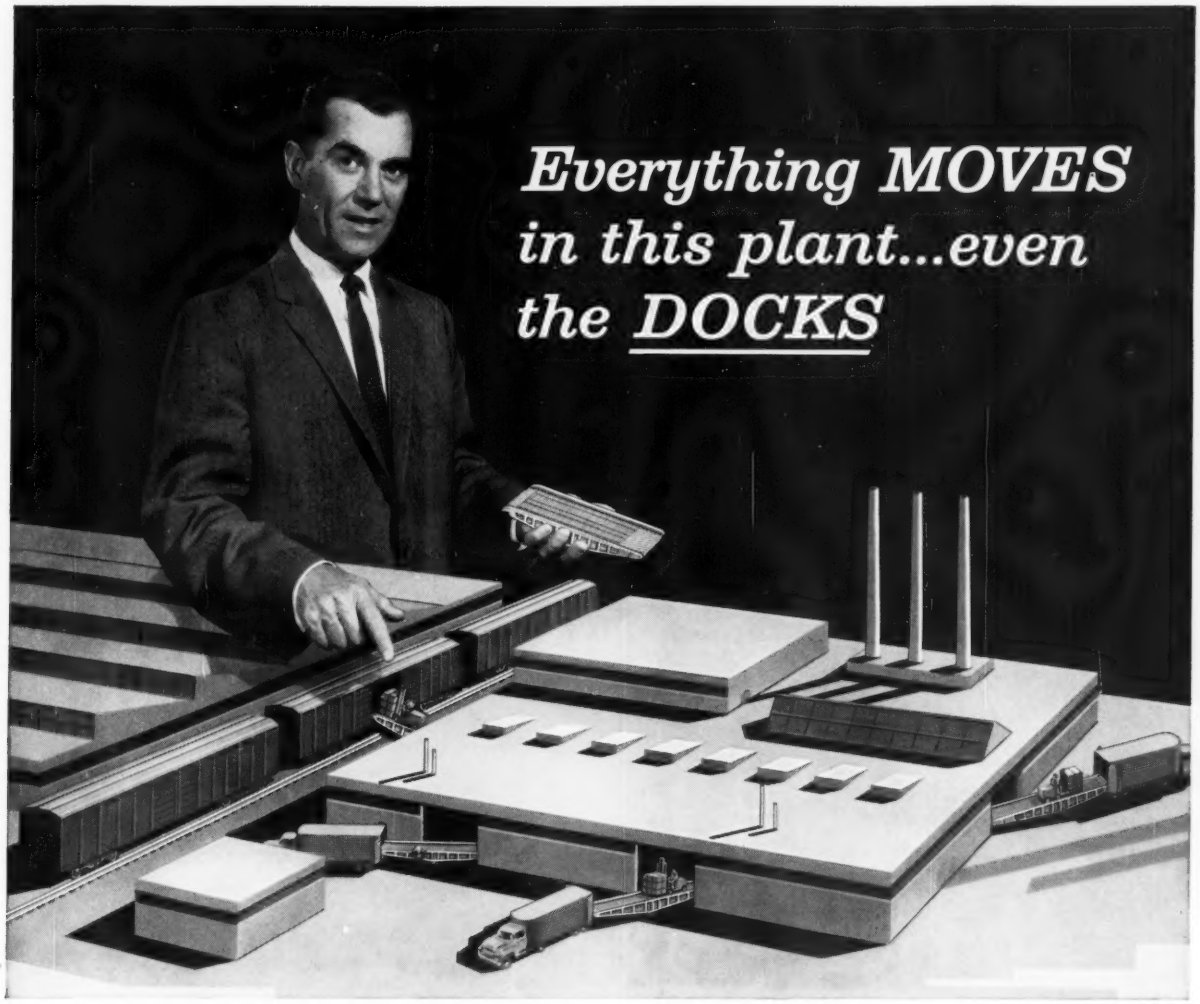

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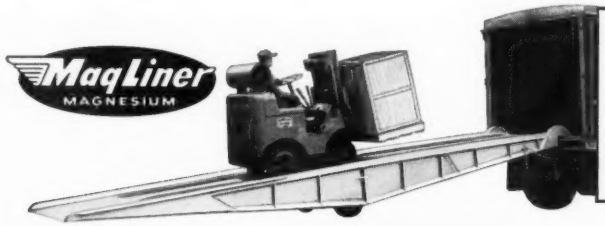

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